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ABSTRACT

The Suffolk County (New York) Department of Social Services sponsored a performance study to gain insight into the department's operations. Management science techniques were used to portray operations of the Client Benefit (CBA) and Community Service (CSA) Divisions. The CBA administers public assistance programs, and the CSA provides social services. The CBA and CSA were disaggregated into 187 and 153 workstations, respectively, and a number of distinct actions were analyzed. Approaches used in the evaluation included queueing theory and the marginal analysis model. Solutions were compared for four generated service-demand scenarios for each division. The studies indicated that some solutions proposed in light of the county's budget deficit, such as decreasing the level of services or reducing the number of staff, and alleviating the staffing slack in some workstations, are not feasible because of the steady and unabated rise in the mandated program's caseload, legal regulations, political expectations, and the queueing behavior of the systems. Some actions are suggested to help the department cope with its work flow, but it is noted that these actions will not remedy the situation, but will merely mitigate a few consequences of the continuing rise in service demand. (Contains 18 tables and 58 references.) (SLD)

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

THE SUFFOLK COUNTY DEPARTMENT OF SOCIAL SERVICES PERFORMANCE STUDY

A FINAL REPORT

by

David Spottheim and George R. Wilson
With a Contribution by Paul C. Libassi

The Center for Regional Policy Analysis
State University of New York
Stony Brook, New York

March 1991

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The Suffolk County
DEPARTMENT OF SOCIAL SERVICES
PERFORMANCE STUDY

RESEARCH DEVELOPMENT
AND
REPORTING

David Spottheim
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DATA COLLECTION
AND PROCESSING

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COMPUTER PROGRAMMING

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sctb

To the Supervisors who identified the stations and matters and to the staff members who recorded their work efforts and work flow patterns, thereby contributing to the initiation of this study.

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Chapter One
INTRODUCTION

Public service delivery agencies in New York, and in Suffolk County (N.Y.) in particular, spend millions of dollars on human services. While these organizations audit how these dollars are spent, they rarely have information about the:

- o Performance and efficiency of these service delivery systems' operation;
- o Effectiveness of the services rendered by these systems;
- o Clients satisfaction with the services rendered by these agencies; and
- o Quality of the services rendered by these agencies.

The lack of information concerning these outcome, satisfaction, and efficiency issues can be partially attributed to the prevailing views found in social service settings. Although expenditures on human services are being audited by the state and federal governments, the prevailing notion is that the accounting and management practices used by the public service delivery systems do not lend themselves to evaluation of these issues.

This notion however, has been challenged in the literature inasmuch as proven theories and quantitative techniques have been used to address the satisfaction, outcome and performance aspects of service delivery sytems operation [see Baskin 1974; Beckman 1982; Cordray 1984; Koss 1978; Spottheim 1975; Spottheim/Wilson 1986-1990].

Meanwhile, the rising cost of rendering public welfare services and the concurrent curtailment of federal and state funds to support such services have prompted an ongoing debate regarding the relationship between services rendered and their administrative costs. Lately, this debate has been intensified by the Federal Government's pressure upon local jurisdictions to improve the performance of their federally sponsored programs through the implementation of:

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* The opinions and findings presented in this report should not necessarily be interpreted as the view or policies of the SCDSS.

- An improved workers' activities monitoring procedure;
- Realistic work standards for such programs; and
- Staffing policies aimed toward the enhancement of workers' productivity [see Lenov 11/14/87; Mathews, 3/7/88; and Raspberry, 2/23/88 in the Washington Post 2/23/88].

Consequently, the Suffolk County Department of Social Services (SCDSS) has decided to sponsor a performance study first. Management felt that such a study will allow administrators to gain a better insight into this department's operation.

It was also felt by management that since the performance aspects of the SCDSS operation are not intuitively obvious, the SCDSS' administrators would benefit from the findings generated by an analytical study portraying the relationships between administrative resources (e.g., payroll budget and staffing) and services rendered by the two major entities of this department.

Consequently, we have decided to use management science techniques to portray the Client Benefit (CBA) and the Community Service (CSA) Divisions' operation, quantitatively. The CBA administers public assistance programs, whereas, the CSA's obligation is to provide Social Services. Since these service delivery entities do not share identical missions and goals, they provide different types of services, and have different operational structures.

Therefore, we have disaggregated these divisions into their respective components and identified their corresponding set of administrative actions taken by them on behalf of their clients. Thus, the CBA & CSA were disaggregated into 187 & 153 work stations, respectively. Also, 35 & 450 distinct service related matters (actions) processed by the CBA & CSA's systems, respectively, were identified. Primary workflow, work effort and other data were then collected and analyzed for the purpose of providing the SCDSS' administrators and supervisors with a quantitative perspective regarding the efficiency aspects of their systems' operation.

I. THE RESEARCH PROBLEMS

The previously discussed decision making environment led us to conclude that this research study should address the following predicaments:

- How should the "factors of production" (staffing and payroll budget levels) be distributed over the CBA & CSA's stations so as to allow them to process demanded (or anticipated) level of service-related matters efficiently, without altering these systems:

1. Operational structure
2. Observed processing time of matters
3. Work flow patterns (of matters) between stations of these divisions; and

- What administrative practices could be modified by management in order to enhance the productivity level of the CBA & CSA systems?

II. THE APPROACH

To address these research predicaments, we have used a blend of social services and organizational technology concepts along with complementary management science techniques.

Accordingly, the Client Benefits (CBA) and the Community Services (CSA) Segments of SCDSS have been viewed as two separate service delivery systems. While they contain corresponding bureaus and centers, each division was viewed as an open queueing network composed of supervisory and line (workers) stations (units) which are linked together through the recurrent flow of case records and administrative related matters that must be processed by these units.

Thus, given the level of matters to be processed (under alternative administrative scenarios), the intent behind the application of these techniques (models), was to determine the number of staff members needed to be allocated (or shifted) to each of these divisions' stations. In applying these models, we have exploited existing worker's performance flexibilities found in these divisions while considering alternative payroll budget configurations and other restrictions for the purpose of ascertaining staffing solutions which:

1. Assure that the processing of service-related matters, involving a survival-threatening situation of a waiting client, have highest processing priority.
2. Assure that the total amount of time spent by a matter in the system is no greater than four weeks.
3. Minimize the number of items (or matters) waiting at a station to be processed.
4. Minimize particularly the overburdened workload of supervisory stations.

It should be noted that the CBA and the CSA's staff allocation solutions provided by this approach were derived in context of the case-record and matter processing activities, respectively.

In summary, the demanded levels of services, the processing time of such services, along with quantitative "snapshots" of these divisions' operational structures, the weekly payroll budgets and the exchangeability of workers' matrices, were used within the framework of the queueing and marginal analysis models in order to:

- o Portray the relationships between the available administrative means (staffing and weekly payroll budget) and the amount of client-related matters processed by these systems;
- o Emulate and streamline the operation of the CBA and CSA systems;
- o Derive current and potential performance (or efficiency) measurements for these divisions; and
- o Derive optimal staffing allocation solutions for these divisions, which minimize the payroll budget and maximize staff utilization simultaneously, under various administrative scenarios.

III. THE THEME & STRUCTURE OF THIS REPORT

The management science approach used in this study allowed us to reduce the operational elements of the CSA and CBA Divisions and the service-related "matters" processed by these systems into a computer algorithm, portraying the weekly operation and performance of these systems, quantitatively. Specifically, the queueing theory along with marginal analysis techniques [see Gross 1975, Fox 1966] have been employed in this study. These techniques were chosen because of their unique properties that simplify the construction of parsimonious models which are capable of providing voluminous information regarding the system's operation, while using a minimum amount of relevant data.

Since these techniques can emulate the weekly operation of the system, it was felt that they also can be used as the quantitative counter-parts of organizational concepts advocated by Katz and Kahn (1966), March and Simon (1958), Perrow (1972), Thompson (1972), Woodward (1970) and found in the social services literature [see for example Cronbach 1982, Hasenfeld 1972, McDaniel 1978, Newman, 1978 and Vinter 1967].

In addition, these techniques were selected because they can emulate and streamline the workflow relationships between the elements of the CBA and CSA systems. Finally, it was felt that since the relationships between the SCDSS' organizational properties are not intuitively obvious, the SCDSS administrators will benefit from analytical models capable of portraying the optimal relationships between "outputs" produced and the corresponding resource needs, under various scenarios. Hence, the analysis commenced with the following tasks:

- o Conceptualization of the operational structure and the objectives of the divisions;
- o Disaggregation of these systems' administrative entities into a set of processing stations and the identification of outputs and/or service related matters processed by these stations; and
- o The collection of primary work effort and other work flow data to portray the interrelationships among processing units (stations).

Consequently, the said techniques were used in conjunction with the primary data base to construct Management's Decision Support Models for the purpose of:

- o Providing a quantitative "snapshot" concerning the actual operation of the systems' elements;
- o Identifying existing (and anticipated) congestion and staffing problems; and
- o Enhancing the productivity of both the CSA and CBA systems under different administrative scenarios.

In this report we present the logical and methodological concepts along with the findings of an applied modeling effort undertaken by us while analyzing the operation of the CBA & CSA systems. The paradigm behind this endeavor is a blend of discursive theoretical concepts found in the social service literature and complementary quantitative techniques culled from the managment science literature.

For expository purposes, however, the theoretical, methodological, and applied research concepts employed, instead of the quantitative aspects of this study, are discussed throughout this report. Hence, the remainder of this paper is structured as follows: the Conceptual Overview of Human Service Organizations and the CBA/CSA Systems, in particular are discussed in Chapter II. Chapter III deals with the Methodology of this endeavor. The results of the CBA Analysis are presented in Chapter IV, whereas the CSA's Findings are discussed in Chapter V. Finally, the Summary and Conclusion can be found in Chapter VI.

Chapter Two
THE CONCEPTUAL OVERVIEW OF THE CBA/CSA OPERATION

For expository purposes, the conceptual overview of the Client Benefits (CBA) and the Community Service (CSA) Divisions are presented below in light of classical concepts regarding; a) social and human services, b) organizations' missions and objectives; and c) organizations' structure and processes.

I. PUBLIC ASSISTANCE AND HUMAN SERVICES

If the services rendered by these systems are perceived to be governmental actions taken in relation to individuals and families, the avowed intent of such services is to assist these clients to return to the position of economic and social self-sufficiency as defined by Morris (1973), Titmus (1968) and Wedemeyer (1970). These actions are executed through a set of Public Assistance, Medical Assistance, Food Stamps and a host of Social Services programs. As the "donor" of these services, the government exercises its power by determining the desired level of health and social welfare of its citizenry, and the eligibility criteria for the beneficiaries (clients) of such programs [see Perloff and Wingo 1968]. Also, the government, as the donor, picks up the cost of services rendered by this service delivery system.

Subsequently, the CBA's delivery centers and the CSA's bureaus were perceived to be "facilities" producing "publicly induced collective services" inasmuch as these services are financed by one segment of society-taxpayers-for the purpose of assisting the client to attain a position of self-reliance. Since the financial revenue of these systems are not derived directly from the services they produced, they are also referred to as non market entities [Fox 1972].

II. THE SCDSS' MISSIONS, GOALS, STRUCTURES AND PROCESSES

While public service delivery organizations are characterized by their enduring operational structure and recurrent administrative processes [Tausky 1977], it was postulated that the SCDSS' missions and goals have contributed (over time) to the development of its current operational structure and processes. In other words, the CBA's centers and CSA's bureaus along with their complementary stations, and the workflow patterns between these stations, have been created and modified by management over time to assure an orderly determination of clients' eligibility, and the provision of mandated services to the eligible.

Also, an earlier exploratory review of the SCDSS' structure confirmed the existence of Tausky's (1977) universal organizational entities and properties such as:

- Enduring organizational structure;
- Identifiable processing stations;
- Identifiable "outputs" produced (or processed) by these stations;
- Measurable work effort devoted by a particular station while processing their respective outputs (or service related matters); and
- Observable workflow patterns between stations [Adapted from Tausky 1977].

The existence of these organizational properties along with the systems' missions and goals, led us to conclude that the interrelationships between these organizations' elements can be analyzed quantitatively [Spottheim 1/24/89].

III. ORGANIZATIONAL TECHNOLOGY

Since the missions and goals have influenced the CBA's and the CSA's operation, the recurrent administrative pocesses (of service related matters) found in these entities can be dubbed as "organizational technology" [see Perrow 1972; Thompson, J.M. 1973; Vinter 1967; and Woodward 1970].

In the public welfare setting, this technology is employed upon and/or in relation to a subject (e.g., client, patient) for the purpose of changing the social, economic, or health status of that subject as was suggested by Hassenfeld (1972) and Vinter (1972).

While different units (within a given service delivery system) may utilize different organizational technologies, they (the units) share two common organization technologies, namely; work process and workflow. The former process denotes "clinical procedures" or internal technology used within a given station. The workflow process on the other hand, deals essentially with the reciprocal relationships that exist between units (stations) involved in the processing of a particular service related matter. In this study, however, the work effort concept was used instead of work process to portray the amount of time spent by a given station while processing a particular matter or output. It was felt that a work process analysis is the domain of review boards and professional associations.

This overview and the chosen methodology, led us to conclude that the CBA's centers and the CSA's bureaus must be viewed as "facilities" composed of an open network of line and supervisory stations engaged in routinized and recurrent administrative process. The respective stations of these systems are linked together through the flow of recognizable "products" or matters which are processed sequentially, as mandated by the mission and goals of the SCDSS. Since several units or work stations are sequentially involved in the processing of a particular matter, workflow, work effort and other data, along with the queueing theory could be used to portray the operational (rather than the formal) structure of any service delivery organization like the SCDSS, quantitatively. Subsequently, a resource allocation method such as the marginal analysis and the queueing theory could be employed to address the performance and productivity problems faced by any service delivery organization containing a stable structure and recurrent administrative processes.

IV. DECISION MAKING ENVIRONMENT

Being non-market firms whose operational budget is derived from public sources, service delivery organizations have little external or market pressure of utilizing their resources efficaciously. In contrast, firms operating in a market economy, must produce and allocate their resources efficiently if they wish to survive in an avaricious and market centered economy [Fox 1972]. Such firms are viable as long as their revenue is greater than their expenses. On the other hand, public service delivery entities do not face such challenges; they can always use the options of requesting additional funding or reducing the quality and/or level of services provided. As a result of this operational environment, interest was developed around the evaluation of service delivery systems through the application of Decision Support Analysis or management science techniques that can be used by management to handle the universal administrative problems of:

- Assuring the realizations of system's goals through the processing of service related matters efficicaciously; and
- Coping with the continuous challenge of persuading service providers, legislators, and interested groups alike to forego their intrinsic opinions and discursive theories regarding the system operation, thereby allowing management to pursue efficiently the collective missions and goals of the organizations in question, [adapted from Tausky 1978].

V. PORTRAYING THE SYSTEM'S OPERATIONAL STRUCTURE

While the observed structure and processes were created by management to assure an orderly operation, relevant indicators are needed to portray the systems' operations and performances. However, contrary to the prevailing notion that: a) caseload, b) number of clients seen, and c) number of cases processed, can be used to measure the system's workload, these data items cannot be used in conjunction with the said techniques [Spottheim 1975, Spottheim & Wilson, 1986-1989]. Since the CBA and CSA systems have been viewed as two mutually exclusive open queueing networks, these items are insufficient to portray these systems' operations quantitatively because:

- They seldom "visit" (or are handled by) more than two stations of systems, and as such, they cannot be regarded as the system's "common flow units" or items which generate a system response and require system resources at a number of stations over a longer period of time; and
- The time and effort devoted by the "unvisited" stations therefore, cannot be "captured" even though they play a major role in the paperwork processes of services requested by eligible clients.

These modeling problems, however, have been avoided by defining an alternative set of "common work flow items."

Hence, to portray the CBA and CSA operational structures and to emulate their processes accurately, we have defined an exhaustive set of administrative processes or actions taken by the stations, in relation to the services requested. These common flow items (actions) are also referred to as "service and management related matters." By using these matters as the models' common flow items we were able to identify the transactions (of matters) between stations which are rarely being "visited" by clients and case records.

Also, these common flow items enabled us to estimate the cumulative time devoted by stations involved directly or indirectly, in the provision of services. Specifically, by "tracing" the flow of matters between stations quantitatively, we were able to emulate situations in which service-related actions (or matters) were initiated in one station and transferred to other stations for further processing, and consequently returned to the originating station.

Chapter Three
MODELING METHODOLOGY

The springboard of this applied research study are recently developed models portraying the relationship between public service means (resource) and ends (outputs) developed by the authors [see Spottheim/Wilson 1986-1989, March and June 1990]. The premise behind these, and the current study in particular, is that the performance and productivity problems faced by service delivery organizations can be resolved through the application of management science techniques. Although it is recognized that a performance study should address both the efficiency and performance aspects of service delivery [Cordry & Tuttle 1984], this applied study deals with the efficiency aspect only. Therefore, this study does have certain limitations. Since this approach deals with the efficiency aspects of resource (staffing & payroll budget) allocation within the SCDSS, it ignores the service delivery issues of:

- Client/worker relationships;
- Effectiveness of the services rendered by this department;
- Clients' satisfaction with the services rendered by the CBA and CSA segments of this department; and
- Quality of the services rendered.

However, unlike the conventional evaluation approach, which focuses on the estimation of "central tendency" of service delivery sytems' production function and comparison thereof, across various organizations, the management science approach is based on the application of management decision support techniques to analyze the performance of a single service delivery system. The premise behind this approach is that the mix of financial and staffing resources can be adjusted so as to approach the "production possibility frontier." This methodology, therefore, provides optimal or "extreme" (rather than "central tendency") staff allocation solutions to problems faced by a single service delivery organization.

I. CONVENTIONAL EVALUATION VS. MANAGEMENT SCIENCE APPROACH

Historically, two major methods have been used to evaluate the performance of non-market firms: the conventional evaluation, and the management science approach.

A. The Conventional Evaluation Approach

Early evaluation efforts were based on the controlled experiment principle as was advocated by Campbell and Stanley (1963) in their classical book. Rather than evaluating the welfare programs in context of their operational structure, Campbell and Stanley (1963) advocated the search for causal relationships through the application of "controlled experiment" and "internal validation" principles.

More recent evaluation studies seem to emphasize a particular "school of thought" or a research paradigm (Cronbach, 1982), hence, they tend to examine:

- Welfare philosophy schemes;
- Political, sociological or psychological processes observed in the systems; and
- Narrow phenomena while using case study and/or "ex post facto" method of investigation.

According to Cronbach (1982), these types of studies tend to be "micro and anecdotal" in nature, and as such they have little application to the management and operational problems faced by the systems. Even Mary Parker Pollett's classical view that management is a process of "getting things done efficiently, through people" [cited in Lee, 1983], seems to suggest that the conventional evaluation is an inappropriate approach for examining productivity problems faced by service delivery systems.

Meanwhile, interest was also developed around the application of econometric methodologies to explore the politico-economic aspects of social and health service programs (see Booms 1973; Cohn 1972; Feldstein 1971; Madden 1972; and Yett 1971).

B. The Management Science Approach

Management is defined as a dynamic decision-making process, which efficiently reconciles human, financial and physical resources for the purpose of "producing" a desired level of outputs [Lee 1983]. Management Science, on the other hand, is a complementary discipline whose aim is to provide management with decision support information regarding:

- Organizational problems which are not intuitively apparent;
- Efficient ways of realizing the organization's production objectives; and

- Feasible courses of action that can be used to streamline the system's operation [Lee 1983].

In sum, the limitations of the evaluation and the econometric studies have led researchers and administrators alike, to explore the applicability of methodologies that can be used to analyze properties such as the structure, processes, outputs and outcomes of entire service delivery systems. Consequently, authors such as Hassenfeld (1972); Mantel et al, 1975; McDaniel (1978); Natale (1981); Newman (1978); Rossi (1978); have advocated the application of these approaches in a social services setting, whereas, Baskin (1974); Melone (1988); Spottheim (1975); Spottheim & Wilson (1986-1989) and others, have demonstrated the application of management sciences techniques to the performance and productivity problems faced by a variety of service delivery systems.

II. DATA REQUIREMENT

The application of the said techniques presupposes that the systems in question have a readily available work standard and work flow data. While such information is available in industrial setting, social service delivery systems seldom have a reporting system for tracking how workers (affiliated with a given station) spend their time while processing their respective services and/or matters.

Hence, to address the aforementioned research problems it was necessary to conduct two (self reporting) surveys for the purpose of collecting primary work flow, work effort and other data concerning the operation of the CBA & CSA Divisions. The work efforts information was then transformed into work standards, whereas the work flow information was used to portray these systems' operational networks, quantitatively. Consequently, the two data bases of this study were constructed so as to include numerical information regarding the:

- Work effort (work standard) measured in minutes, devoted by these division's stations to process their respective matters;
- Weekly arrival rate of matters to the CBA's Centers and the CSA's Bureaus and consequently, to each station of these entities;
- Work flow patterns of matters between the stations of these systems;
- Worker's performance flexibility (exchangeability) matrix;
- Estimated Weekly payroll by station; and
- Current staffing by station.

Subsequently, this data base was used in conjunction with the queueing and marginal analysis theories [see Gross 1975; Fox 1966] for the purpose of portraying the CBA and CSA operation, quantitatively.

III. THE MANAGEMENT SCIENCE TECHNIQUES USED IN THIS STUDY

Health and Welfare Officials have recognized recently that the current research, planning and evaluation methods found in the social services literature are inappropriate to address the performance and efficiency aspects of service delivery system operations, namely:

- Definition and classification of outputs or services;
- Administrative structure and processes;
- Costs of operation; and
- Optimal utilization of staff.

The inadequacy of these methods can be partially attributed to the fact that the theorists, practitioners and researchers alike tend to use discursive theories to address these aspects. The problem with the discursive theories is that they provide no rigorous relationships between propositions [Tausky 1977]. Also, this research environment has been exasperated by the fact that public service delivery systems are viewed by researchers as merely "human treatment, or processing organizations," [see Hassenfeld 1972; Vinter 1967; Beckman 1982; and Mantel 1975] rather than service delivery systems. Thus, many of the evaluation studies are based on seemingly competing theoretical concepts such as:

- Exchange and conflict;
- Integration, coordination, interface, and linkages;
- Organizational technology; and
- System's and its external environment interrelationships [see Spottheim 1974, 1975, 1985].

While the theoretical concepts seem to be a collection of competing items, in reality, many of them have been consolidated into the mangement science theories.

However, the management science techniques used in this study and discussed below, deal with performance and efficiency aspects of production, and as such, they ignore individual's behavior. Therefore, employees are regarded by these theories as needed "factors of production" for realizing the mission and goals of the organization in question, through the performance of assigned tasks [March & Simon 1958]. Therefore, the more tasks a worker can perform, the higher the efficiency potential of the system in question.

A. The Queueing Theory

Since its inception by Erlang (1917), queueing theory has been used to study the random arrival of items, subjects, or matters to be processed at a processing facility of limited capacity [see Gross, 1975]. In applying this theory to the problems at hand, we assumed the CBA's centers and the CSA bureaus are operating as an "Open Jacksonian Queueing Network" [Jackson 1963] inasmuch as they have no control over the weekly arrival rate of matters to be processed at a particular center or bureau. In using this theory it was also assumed that management is striving toward a steady state operational protocol - characterized by:

- A "poisson" process dictating the arrival rate of matters to the systems, and subsequently, to individual stations for processing purposes;
- A processing time, (of any matters) which follows an "exponential probability" distribution, reflects the variety of matters processed at most stations as validated empirically;
- A mean arrival rate which is less than the mean processing rate of matters;
- A network of stations, which the matters must move through while being processed sequentially, where each station contains one or more parallel service channels; and .
- A "calling population" (e.g., arriving clients/cases/matters) which is "infinite;" i.e., the arrival process is not perceivably reduced by having one more arrival to the system.

B. The Marginal Analysis Model

The premise behind the application of Fox's (1966) Marginal Analysis model is the notion that the staffing mix across all of the processing stations can be adjusted so as to accomplish an efficient allocation of staffing resources to achieve desired or demanded "production" targets, for matters over the long run with minimal administrative delay to the matters before final determination is rendered. Hence, given the desired processing level of matters, the intent behind the application of this model was to determine the number of workers needed to be allocated to each station.

Concurrently, efforts were made to:

- exploit existing workers' performance flexibilities;
- minimize total operational cost (e.g., wages & salaries); and
- assure that the amount of time spent by a matter in the system is no greater than four weeks.

In other words, we have tried to find how to efficiently allocate the weekly payroll budget so as to optimize an administrative performance measure based on the timely disposition of service related-matters. Thus, the formulated marginal analysis model contains an objective function and a set of inequality constraints regarding the amount of time the various matters spent in their respective stations. The sum of the (average) time spent by a given matter at each of the stations it visited, was pegged to be less or equal to a four week period. In addition above, it was necessary to:

- specify relationships between time spent by matters at their respective stations and the processing capacity of these stations; and
- identify compatible worker and supervisor classes that can be interchanged.

Since the average time spent by a matter at a service station is inversely proportional to the processing capacity of that station, this relationship is not a linear one. Therefore, the capacity was estimated through the application of the queueing theory and this model. In doing so, it was assumed that the processing capacity of a station can be expanded only by increasing the number of workers of that station. This assumption was made in concurrence with our research aim of enhancing the productivity level of this Division without tampering with the observed work standards.

To determine the optimal number of workers at each service station, several interchangeable worker/supervisor classes were identified. When additional capacity was required by a given station, the model's algorithm assigns an available worker, whose hourly wage rate is equal to the lowest rate within the class of still available workers.

The logic that drives the marginal analysis optimization, in short, is getting the most "bang for the buck." A worker of a certain grade level, therefore, is assigned to a particular station if the expected waiting time or length of queue (of matters waiting to be processed) in that station is shortened more than any other station where the worker may be placed. If a worker is taken away from one station and placed in another, it is because the decrease in waiting time (or length of queue) at the station to which the worker is assigned is greater than the waiting time increase at the station from which the worker is taken.

For the so called "minimum cost" (or "lean payroll budget configuration") solutions, whereby only the minimum staffing is allowed to meet work requirements, the assignment of workers are made to a station until the production capacity just exceeds the inflow of work to the station. In addition, the four week limit time for matters in the system is also enforced.

Since the queueing and the marginal analysis models were used to estimate the long run optimal weekly payroll budget and staffing requirements to process a given level of matters, we have specified these models so as to exploit the CBA and CSA operational flexibilities and consider these systems' constraining factors simultaneously, while deriving the optimal staffing solutions for the systems.

IV. THE RESULTS

The application of Fox's (1966) model in conjunction with this study's data bases mentioned earlier enabled us to generate descriptive and prescriptive results concerning the operation and performance of the two systems. Specifically, the application of this approach allowed us to generate a uniform set of estimated results (by station) for several research scenarios, namely, the:

- Station Number
1. Weekly arrival rate (of matters) to the station
2. Weekly services (or processing) rate per worker by station
3. Present utilization index
4. Optimal utilization index
5. Average number of itmes waiting in a station's queue before being processed by that station
6. Worker's grade
7. Present staffing (by worker's grade)
8. Staffing after shifting

9. Optimal staffing (by grade)

A. Results' Description

Since the nine items listed above may not be familiar to the readers of this report, we provide below brief definitions thereof:

1. The weekly arrival rate to a station is the sum of service related matters arriving (to a given station) from the "rest of the world" or from another station within the center or bureau service area for further processing. This arrival rate presupposes that the length of the working week is equal to 35.5 working hours. In contrast, the weekly arrival rate to the system reflects the (weekly) client's demand of service-related actions or matters to be processed by the CBA. Since several stations are involved in processing the demanded matters (for each arrival to the system), the arrival rate to the stations on average is higher than the arrival rate to the system.

2. The weekly service rate (processing) per worker, denotes the expected number of items (associated with any type of matter) that can be processed by a worker affiliated with the given station. This rate was based on a 30 hour work week. The remaining 5.5 hours were considered to be vacation, sick leave, holiday, and breaks.

3. Present utilization index is defined as the proportion of time, workers (affiliated with a given station) were found to be busy (i.e., actively engaged) in the processing of one (or more) of the CBA or the CSA's matters. A utilization index greater than one (1) implies a congested (or bottleneck) station and as such this station may contribute to a situation where related downstream stations are "starving for work." The bottleneck problems have been mitigated by adding a "server" or worker to that station. Since the arrival rate to each station was captured during a short period of time, it gave us a "snapshot" of system operation, during that period. Thus, a present utilization index greater than one (1) implies that either:

- Workers must work overtime to prevent a buildup of matters on their desk;
- Workers must be temporarily shifted from other stations to prevent this buildup;
- The arrival rate actually represents a "peak" in cycle and the present staff members may "work off" the buildup during a subsequent "valley" in the cycle; and
- In any case, a utilization index greater than one is not a "steady state" phenomenon and must be interpreted as a transient statistic that must be remedied in one of the aforementioned ways.

4. Optimal utilization index is the estimated proportion of time that workers are actively engaged in processing matters arriving to the station after an optimal reallocation of staff. This index was not allowed to be greater than 0.99.

5. Average number of items waiting in a queue reflects the expected number of case records waiting in a station to be processed under a steady state operational environment. This variable was used in the CBA's study as the objective function to be minimized, whereas in the CSA's study, the average waiting time spent by a matter in a station was used as the objective function.

6. Worker's grade depicts the civil service grade level(s) found in the station.

7. Present staffing is the current assigned number of workers by grade to each station.

8. Staffing after shifting reflects the number of staff members at each station after staff reallocation using marginal analysis without releasing any workers. Under the lean (minimum) and reduced payroll budget configurations, this variable may have a value which is higher than the optimal staffing solution (see Item I).

9. Optimal staffing reflects the "best" distribution of workers by grade (across all stations) which will assure the timely disposition of matters and may require hiring or releasing workers (especially in a minimum cost or lean budget scenario).

Since the results generated by the management science approach can tell us what performances and/or productivity levels are attainable and what cannot be expected from the CBA and CSA systems, other experiments with alternative administrative structures are not necessary. Instead, corrective courses of action to enhance the performance and productivity of this service delivery system could be inferred from the findings generated by the marginal analysis model in particular, as discussed earlier in this Chapter.

B. Results' Formulas

Recall that the management science techniques used in this study are parsimonious in nature and as such, they provided us with voluminous amount of information derived from minimum number of statistically validated variables. Therefore, several of the estimated results listed above can be replicated numerically through the application of formulas. These formulas are found in any text on queueing theory and they can be used by management to monitor and adjust staffing needs by stations.

Chapter Four
THE CLIENT BENEFITS ANALYSIS

The Client Benefits Division's obligation is to administer a host of administrative and client-related matters associated with the rendering of a public assistance program's mandated services.

Being a local service delivery system whose missions and goals are well defined, this Division's operation has been constructed to aid clients in achieving a state of economic and social self sufficiency through the provision of Public Assistance Services.

I. THE CBA's MISSION, GOAL, STRUCTURE AND PRODUCTS

Although its operational structure has been recently modified, the CBA's centers and their corresponding work-stations, along with their work-processes and the work flow patterns between these stations, were designed and modified by management for the purpose of assuring an orderly determination of clients' elgibility and the provision of mandated services to the eligible.

A. The Mission & Goal

As a service delivery system, the CBA determines clients' eligibility and administers services mandated by the following programs: a) Public Assistance, b) Medical Assistance, c) Food Stamps, and d) Heat and Electrical Assistance Program (HEAP). According to the CBA's management, the mission and goal of this system can be summarized as follows:

- The Mission of the CBA is to provide mandated programs' services to the needy and poor population of Suffolk County; and
- The Collective Goal of these Public Assistance programs and their respective services is to help the eligible clients attain and retain economic self sufficiency for themselves and their families.

B. Enduring Organizational Attributes

Although the above mission and goal have periodically prompted structural changes in this Division, certain organizational attributes and properties have endured in the CBA, namely:

- Recognizable organization structure;
- Identifiable processing stations;

- o Identifiable "outputs" produced (or processed) by these stations;
- o Measurable work efforts devoted by a particular station while processing their respective outputs; and
- o Routinized (recurrent) work flow patterns between stations [Adopted from Tausky 1977].

In addition to these properties, each of the stations of both the current and restructured systems seem to be specialized in the processing of a particular matter associated with the programs. Hence, a given station will process a particular matter associated with the arriving case records of a particular program, whereas the subsequent station will handle another related matter. Because of these unique administrative processes, the CBA operation was evaluated in context of its case record processing activities.

C. The CBA's Products

Recall that the stations of both the current, ("old") and the restructured ("new") CBA's systems are linked together, administratively, through a flow of recognizable products or program and administrative related matters which are processed sequentially, as implied by the mission and goal of this Division. Although the CBA has been recently restructured, both the "old" and the "new" systems shared the obligation processing of a common set of matters associated with the incoming program's related case records. These matters are defined in Table I.

A cursory examination of this table will reveal that it contains 37 program and administrative related actions (or matters) taken on behalf of the clients affiliated with federally and/or state-sponsored programs such as:

1. Aid to Dependent Children (ADC)
2. General Public Assistance (HR)
3. Emergency Assistance (EA)
4. Medical Assistance (MA)
5. Heat & Electrical Assist. Program (HEAP)
6. Food Stamps (FS)
7. General Administrative & Mgmt. Activities (ADMI)

II. AN OVERVIEW OF THE CBA ANALYSIS

The theoretical concepts discussed thus far and the universal organizational attributes in particular, were used as the conceptual formulation for this analysis. Consequently, the

Table I
THE CLIENT BENEFITS DIVISION
List of Matters

Matter's No. & Name

1 Information and Referrals (internal and external)
2 Application: Intake
3 Application: Interview
4 Application: Eligibility Determination
5 Application: Case Record Processing
6 Application: Quality Control
7 Recertification: Scheduling
8 Recertification: Interview
9 Recertification: Eligibility Determination
10 Recertification: Case Record Processing
11 Recertification: Quality Control
12 General Undercare Maintenance: Intake
13 General Undercare Maintenance: Interview
14 General Undercare Maintenance: Determination
15 General Undercare Maintenance: Case Record Processing
16 General Undercare Maintenance: Quality Control
17 Housing: Interview
18 Housing: Placement
19 Conferences/Meetings/Phone Contacts: Agencies
20 Conferences/Meetings/Phone Contacts: Advocates
21 Conferences/Meetings/Phone Contacts: Vendors
22 Conferences/Meetings/Phone Contacts: Clients
23 Conferences/Meetings/Phone Contacts: Staff or Supervisors
24 Monthly Mailers
25 Training
26 Case Supervisory Review (CSR Centers Only)
27 Statistical Reports Generation
28 Statistical Reports Review
29 Directing and Managing Staff Activities
30 Fair Hearing Preparation
31 Maintaining Case Records - Filing
32 Housekeeping: Supplies, Stockroom, Building Problems
33 Evaluation of Staff
34 Case Record Review (Not CSR)
35 Photo I.D.
36 Routine Daily Activities
37 Administrative Communications

said management science techniques were used in conjunction with the CBA's data base to generate descriptive and prescriptive information regarding this system's performance and operation. The information generated by these techniques includes: a) work standards, b) processing time, c) costs, d) weekly arrival and processing rates, e) current and optimal staff utilization index and f) optimal staff allocation solutions under alternative administrative scenarios.

To generate this information for both the current ("old") and reorganized ("new") operational structures of the CBA, it was necessary to view these systems as two separate queueing networks, even though they share some common operational elements. Specifically, both of these systems are composed of supervisory and line (workers) stations which are linked together through the recurrent flow of recognizable administrative and program-related cases that must be sequentially processed by these stations.

Hence, given a particular weekly arrival rate of case records to these systems' centers the intent behind the application of the said models was to determine the number of staff members needed to be allocated (or shifted) to each station, under various scenarios.

A. Data Estimation

To address the aforementioned research problems, and subsequently the scenarios discussed below, it was necessary to collect primary work flow, work effort and other data concerning the operation of this Division. Consequently, the data base for this analysis was constructed so as to include numerical information identified earlier in Chapter Three, Section II.

However, due to coding problems found in the Public Assistance Programs' work flow data, it was necessary to approximate the weekly arrival rate of case records (cases) for the Islip and Huntington Centers, in particular, [see Spottheim/Wilson, June 1990]. It was found that the ratio of hourly arrival rate of a particular program's cases to the caseload for that program at a center was extremely consistent across centers with some deviation at Islip and Huntington. Thus, the hourly arrival rates of these centers were adjusted such that they, too, would possess the characteristic ratio processed by all other centers. These ratios by (PA) program were estimated to have the following values:

	Ratio
1. Aid to Dependent Children (ADC)	0.0155
2. General Public Assistance (HR)	0.0155

3.	Emergency Assistance (EA)	0.0155
4.	Medical Assistance (MA)	0.0131
5.	Heat & Electrical Asst. Prog. (HEAP)	0.0155
6.	Food Stamps (FS)	0.0031

For expository purposes, let us assume that the ADC caseload of a center is 1000 cases. This center's hourly arrival rate of ADC cases is obtained by multiplying its caseload by 0.0155 (1000 x 0.0155 = 15.5 cases/hr.). By multiplying (15.5 x 35.5), one will get the weekly arrival rate of 550.2 cases.

In addition to these ratios, it was necessary to estimate the arrival rate of cases to each center of the restructured (new) CBA system, and consequently, to the corresponding stations of these centers. To ascertain these arrival rates, we have used administrative CBA's data concerning the (PA) programs' caseload by center. By applying the estimated ratios mentioned above to the center's caseload (by program), we were able to estimate the weekly arrival rate of cases (by program) to each center. Subsequently, the arrival rate of matters to each station was estimated and the operational structure of the "new" CBA system was animated quantitatively. Consequently, efficiency aspects embedded in scenarios 2-4 were analyzed.

B. The Scenarios

Recall that the Research problems mentioned in Chapter I, were addressed through the estimation of staffing solutions for various scenarios. In other words, the management science techniques were used to ascertain optimal resource (payroll budget & staffing) solutions under various operational scenarios. For expository purposes, however, the results presented in this chapter are confined to four scenarios, concerning both the "old" and the "new" CBA systems, hence:

Case 1 - provides "steady state" solutions for a situation in which management wishes to know how should the present level of factors of production (e.g., weekly payroll budget and staff) be distributed over the "old" CBA's stations, thereby allowing this system to process a weekly arrival rate of program and administrative cases observed during the Fall of 1989, in the most efficient manner.

Case 2 - provides steady state solutions for a situation in which management wishes to know the optimal distribution of staff members over the "new" CBA's stations so as to allow this restructured system to process efficiently, an observed increase over 12% in the weekly arrival rate of cases and matters (observed in May 1990).

Case 3 - provides steady state solutions for a situation in which management wishes to know the optimal staff allocation over the "new" network of stations so as to enable them to process the recently observed (May 1990) cases arrival rate under a "lean" budget configuration (e.g., minimum cost solutions).

Case 4 - provides steady state solutions for a situation in which management wishes to know the; a) amount of cases that can be processed (per week) under a restricted weekly payroll configuration which is five percent (5%) below the Fall 1989, weekly payroll budget, b) the corresponding amount of staff members needed to process the said arrivals, and c) the optimal distribution of these workers across all stations of the "new" system.

We mean by "steady state solution" in the foregoing, a solution to a system whose defining parameters are stable and predictable in a statistical sense. We do not mean a system that has been rendered deterministic; rather, the variability has been modeled (accounted for) explicitly. Finally, the reader should note that Case 1 deals with the old structure, whereas the remaining cases deal with the recently restructured (new) CBA System.

C. Modeling Methodology

Since the Fox's (1966) model used to address these four cases, must have a single objective function and numerous constraints, we have designated the number of cases waiting to be processed at each station to be the objective function to be minimized, whereas, the constraints (or rules of operation) of this model were specified to:

- exploit existing worker's performance flexibilities, thereby, allowing us to transfer workers from a given center's station to any other station of the system;

- assure that the amount of time spent by a matter in the system is no greater than four weeks;
- assure that a service or a matter which involved a survival-threatening situation, and/or client waiting for services, be processed immediately; and
- mitigate congestion problems found in supervisory and line (workers) stations due to overburdened workload.

These rules were incorporated into the model's computer programming to assure that the system's productivity enhancement solutions are ascertained without tampering with the; a) work standards, b) organizational structure and c) work flow patterns as indicated by actual observation of the system.

Therefore, we assumed that the processing capacity of a station can be expanded by increasing the number of workers at that station. On the other hand, workers affiliated with a station whose utilization index was found to be low, were transferred to congested stations, if possible, as indicated by the worker interchangeability matrix. The number of workers added to a congested station was determined by taking into account the necessary number of workers to minimize the waiting time a matter must spend at the station, as well as any additional workers that may be required to assure that matters needing action at the station are assured of clearing the system in four weeks. Finally, the system's efficiency was measured in terms of the stations' utilization index.

D. Solutions Provided

The four scenarios (cases) mentioned earlier, represent a handful of administrative situations that have been analyzed through the application of the marginal analysis (resource allocation) model, in particular. The application of Fox's (1966) model in conjunction with the CBA's data base enabled us to generate descriptive and prescriptive results concerning this system's staffing needs and performance. Specifically, this approach allowed us to generate a uniform set of numerical results (by station) for each scenario, namely, the:

- Station Number

1. Weekly arrival rate (of cases) to the station
2. Weekly services (or processing) rate of cases per worker by station
3. Present utilization index
4. Optimal utilization index
5. Average number of items waiting in a station's queue

before being processed by that station

6. Worker's grade
7. Present staffing (by worker's grade)
8. Staffing after shifting
9. Optimal staffing

Since these result items were defined earlier in this report, that will not be redone in this Chapter. In addition to these resource allocation results, the findings of miscellaneous analysis concerning the old system are provided in this Chapter.

Also, it should be noted that the solutions provided by the models were calculated in context of the CBA case record rather than matter processing activities. Finally, the solutions for scenarios 2-4 are animated results inasmuch as the restructured CBA was not in operation at the time of this analysis.

E. Descriptive Information Generated

In addition to the above solutions, descriptive information regarding the CBA operation and performance has been produced for expository purposes. Thus, several tables containing descriptive information concerning the system's operation, have been included in the Addendum of this report.

III. A STAFFING SOLUTION FOR THE "OLD" CBA SYSTEM

Although this Chapter deals with the estimation solution for the four administration scenarios mentioned above, the solutions presented in the section are confined to the first scenario (Case I) only. In other words, the resource allocation solution (e.g., weekly payroll budget and staffing) are for the "old" CBA operational structure that was in existence during the data collection phase of the Fall of 1989. The CBA system at that time, was composed of nine centers and 187 corresponding stations. These centers are:

1. Islip
2. Coram
3. Smithtown
4. Huntington
5. Riverhead
6. Mastic
7. Amityville
8. Patchoque
9. Wyandanch

The centers and their complementary stations along with the approximated average weekly salary per worker are listed in Table II, whereas, the administrative and program related matters are precluded from this section, inasmuch as they were listed earlier in Table I.

Table II
THE OLD CLIENT BENEFITS' STRUCTURE
List of Stations by Center

I. ISLIP CENTER STATIONS

Station Code and Name		Avg. Wkly. Salary Per Wkr.*
1	Center Manager	845.00
2	Administrative Clerks	390.50
3	Eligibility Supervisor I	712.00
4	Eligibility QC Examiner I	599.00
5	Eligibility Examiners I	504.00
6	Eligibility Supervisor II	712.00
7	Eligibility QC Examiner II	599.00
8	Eligibility Examiners II	529.33
9	Eligibility Clerical Unit	362.40
10	Receptionist/Reception Examiner	438.75
11	File Room Clerk	375.00
12	Income Maintenance Supervisor I*	712.00
13	Income Maintenance QC Examiner I	599.00
14	Income Maintenance Examiners I	504.00
15	Income Maintenance Supervisor II	712.00
16	Income Maintenance QC Examiner II	599.00
17	Income Maintenance Examiners II	515.88
18	Income Maintenance Clerical	375.00
19	Medicaid Supervisor	712.00
20	Medicaid QC Examiners	599.00
21	Medicaid Examiners	504.00
22	Medicaid Clerical	375.00
23	Housing Workers	406.00
24	Data Entry Supervisor	422.00
25	Data Entry Operators	375.00
26	CAP Workers	406.00

II. CORAM CENTER STATIONS

Station Code and Name		Avg. Wkly. Salary Per Wkr.
27	Center Manager	845.00
28	Administrative Clerk	375.00
29	Eligibility Supervisor	712.00
30	Eligibility Quality Control	599.00
31	Eligibility Interviewers	535.67
32	Eligibility Clerical	382.75
33	Receptionist	487.00
34	File Bank	375.00
35	Undercare (IM) Supervisor*	712.00
36	Undercare (IM) Quality Control	599.00
37	Undercare (IM) Examiners	504.00
38	Undercare (IM) Clerical	375.00
39	Undercare (IM) Supervisor	712.00

* Note that the term "Income Maintenance" is synonomous with the term "Undercare (IM)".

Table II Con't
List of Stations by Center

40	Undercare (IM) Quality Control	599.00
41	Undercare (IM) Examiners	504.00
42	Medicaid Supervisor	712.00
43	Medicaid Quality Control	599.00
44	Medicaid Examiners	504.00
45	Medicaid Clerical	375.00
46	Housing	406.00
47	Data Entry Supervisor	504.00
48	Data Entry Operators	375.00
49	Client Assistance Program	406.00

III. SMITHTOWN CENTER STATIONS

Station Code and Name		Avg. Wkly. Salary Per Wkr.
50	Center Manager	845.00
51	Administrative Clerk	406.00
52	Eligibility Supervisor	712.00
53	Eligibility QC	599.00
54	Eligibility Examiners	504.00
55	Hospital Examiner	599.00
56	Eligibility Clerks	375.00
57	Receptionist/Screener	439.50
58	Undercare (IM) Supervisors	712.00
59	Undercare (IM) QC	599.00
60	Undercare (IM) Examiners	512.64
61	Undercare (IM) Clerks	375.00
62	File Clerk	375.00
63	Supervisor Emergencey Fuel	599.00
64	Emergency Fuel QC	504.00
65	Temporary Fuel Workers	268.00
66	Medicaid Supervisor	712.00
67	Medicaid QC	599.00
68	Medicaid Examiners	504.00
69	Chronic Care Examiner	599.00
70	Medicaid Clerks	375.00
71	CAP Worker	406.00
72	Housing Workers	438.67
73	Data Entry Supervisor	268.00
74	Data Entry Operators	381.71
75	Central Mail Room	380.00

IV. HUNTINGTON CENTER STATIONS

Station Code and Name		Avg. Wkly. Salary Per Wkr.
76	Center Manager	845.00
77	Administrative Clerk	406.00
78	Eligibility Supervisor	712.00
79	Eligibility Quality Control	599.00

Table II Con't
List of Stations by Center

80	Eligibility Examiners	504.00
81	Eligiblity Clerical	375.00
82	Receptionist/Screener	504.00
83	File Bank	375.00
84	Income Maintenance Supervisor	712.00
85	Quality Control Examiner	599.00
86	Income Maintenance Examiners	504.00
87	Income Maintenance Clerical	375.00
88	Income Maintenance Supervisor	712.00
89	Quality Control Examiner	599.00
90	Income Maintenance Examiners	504.00
91	Medicaid Supervisor	712.00
92	Medicaid Examiners	504.00
93	Medicaid Clerical	375.00
94	Housing Workers	406.00
95	Data Entry Supervisors	438.00
96	Data Entry Operators	375.00
97	HEAP (Emergency Fuel) Supervisor	599.00
98	HEAP Workers	268.00
99	CAP Workers	504.00

V. RIVERHEAD CENTER STATIONS

Station Code and Name		Avg. Wkly. Salary Per Wkr.
100	Center Manager	845.00
101	Administrative Clerk	406.00
102	Eligibility Supervisor	712.00
103	Quality Control Examiner	599.00
104	Eligibility Examiners	542.00
105	Eligibility Clerical	356.00
106	Reception/Screener	504.00
107	File Bank	356.00
108	Income Maintenance Supervisor	712.00
109	Quality Control Examiner I	599.00
110	Income Maintenance Examiners	535.67
111	Income Maintenance Clerical	357.50
112	Income Maintenance Supervisor II	653.00
113	Quality Control Examiner II	599.00
114	Income Maintenance Examiners	523.00
115	Medicaid Supervisor	712.00
116	Medicaid Examiners	504.00
117	Medicaid Clerical	381.00
118	Housing Workers	406.00
119	Data Entry Supervisor	504.00
120	Data Entry Operators	398.50
121	Emergency Fuel Supervisor	599.00
122	Emergency Fuel Quality Control Examiner	268.00
123	Emergency Fuel Workers	268.00
124	CAP Worker	406.00

Table II Con't
List of Stations by Center

VI. MASTIC CENTER STATIONS

125	Center Manager	845.00
126	Administrative Clerk	406.00
127	Eligibility Supervisor	712.00
128	Eligibility QC Examiner	599.00
129	Eligibility Examiners	504.00
130	Eligibility Clerks	375.00
131	File Bank Clerk	375.00
132	Reception/Screening	439.50
133	Medicaid Supervisor	712.00
134	Medicaid Examiners	504.00
135	Medicaid Sr. Clerk Chronic Care Maintenance	406.00
136	Medicaid Clerks	375.00
137	Undercare (IM) Supervisor	712.00
138	Undercare (IM) QC Examiners	599.00
139	Undercare (IM) Examiners	514.56
140	Undercare (IM) Clerks	375.00
141	Housing Workers	406.00
142	Data Entry Supervisor	504.00
143	Data Entry Operators	375.00
144	CAP Workers	406.00

VII. AMITYVILLE CENTER STATIONS

Station Code and Name		Avg. Wkly. Salary Per Wkr.
145	Center Manager	845.00
146	Administrative Clerk	375.00
147	Eligibility Supervisor	712.00
148	Eligibility QC Examiner	599.00
149	Eligibility Examiners	523.00
150	Eligibility Clerks	354.00
151	Receptionist Examiner/Reception	375.00
152	File Bank	375.00
153	Undercare (IM) Supervisor	712.00
154	Undercare (IM) QC Examiners	599.00
155	Undercare Examiners	473.88
156	Undercare Clerks	375.00
157	Medicaid Supervisor	712.00
158	Medicaid Examiners	456.00
159	Medicaid Sr. Clk. Typ. CC Maintenance	406.00
160	Medicaid Clerk	375.00
161	Housing Workers	406.00
162	Data Entry Supervisor	422.00
163	Data Entry Operators	375.00
164	CAP Worker	406.00

Table II Con't
List of Stations by Center

VIII. PATCHOGUE CENTER STATIONS

Station Code and Name		Avg. Wkly. Salary Per Wkr.
165	Center Manager	845.00
166	Administrative Clerk	406.00
167	Eligibility Supervisor & Quality Control	712.00
168	Eligibility Examiners	551.50
169	Eligibility Clerical	375.00
170	Reception	599.00
171	File Bank	375.00
172	Undercare (IM) Supervisor	712.00
173	Undercare (IM) Quality Control	599.00
174	Undercare (IM) Examiners	504.00
175	Undercare Clerical	375.00
176	Medicaid Supervisor & Quality Control	712.00
177	Medicaid Examiners	504.00
178	Medicaid Clerical	375.00
179	Housing	406.00
180	Data Entry Supervisor	463.00
181	Data Entry Operators	375.00
182	CAP Worker	406.00

IX. WYANDANCH CENTER STATIONS

Station Code and Name		Avg. Wkly. Salary Per Wkr.
183	Center Manager	845.00
184	Emergency Fuel (HEAP) Supervisor	549.00
185	Emergency Fuel (HEAP) Examiner	504.00
186	Housing Worker	406.00
187	Data Entry Operator	375.00

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* Derived from the Fall of 1989 Data. To estimate the labor cost per minute, the figures appearing in this column must be divided by 2,130.

CBASTA

A. Case I - Solutions

Solutions for Case-1 are tabulated by centers, in Table III. A cursory examination of this table will reveal that it contains nine columns of numerical information concerning the solution items listed earlier. A further examination of this table will reveal that the system requires 449 workers and a weekly payroll budget of $219,209 in order to achieve a steady state operational environment. In contrast, this system's staffing level was 446 workers, in the Fall of 1989.

Also, notice that the optimal staffing listed in Column I is different from the present staffing (see Column B). For instance, the present staffing for station No. 5 is composed of 5 grade 15 workers, whereas, the optimal staffing solution calls for 2 (grade 15) workers, therefore, 3 (grade 15) workers were transferred to other stations. Also, notice that upon transferring these 3 workers (to other stations) the optimal utilization index was raised to .693 (from the present index of .277), without affecting the length or queue of matters waiting to be processed. A comparison of the current utilization against the optimal indices will reveal that the latter indices have a higher value than the former. Ideally, the optimal utilization indices should have a range of 0.55 to 0.90.

Some stations, however, have a current utilization index which is greater than one. For example, the insufficient current staffing of Islip Center's Station No. 11 causes congestion in that station, and a very high "present utilization" index (2.142). This high "present utilization" implies that this station requires a staff of 3 persons, rather than the current one (grade 8) worker in order to comply with a steady state operational environment, mentioned earlier.

Moreover, numerous Coram Centers' stations are congested inasumch as their current utilization index is greater than one. For instance, station 28, present utilization index is 1.140. By transferring an additional worker to this station, this index was reduced to .570. In addition, it was found that several of the Smithtown Centers' stations were also congested. To eliminate the congestion, it was necessary to transfer and/or hire additional workers.

To mitigate other congestion problems, workers were also transferred, from stations where utilization indices were found to be low, to selected overburdened stations at Huntington, Riverhead, Mastic and Amityville Centers.

In sum, Fox's (1966) resource allocation model, used in this

Table III
CASE I-SOLUTIONS
for the
OLD CLIENT BENEFITS SYSTEM

CASE01

NUMBER OF REQUIRED EMPLOYEES : 449
NUMBER OF PRESENT EMPLOYEES : 446
TOTAL REQUIRED WEEKLYPAYROLL : $ 219201.00
TOTAL PRESENT WEEKLY PAYROLL : $ 217777.00
SYSTEM OPTIMIZATION INDEX : 817.1052

CENTER 1: ISLIP

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
1	45	75	.600	.600	.9	27	1	1	1
2	257	117	1.098	.732	1.5	10	1	1	1
						8	1	2	2
3	78	144	.542	.542	.6	23	1	1	1
4	135	129	1.047	.523	.4	19	1	1	1
						15	0	1	1
5	115	83	.277	.693	1.3	15	5	2	2
6	21	53	.396	.396	.3	23	1	1	1
7	59	90	.656	.656	1.2	19	1	1	1
8	396	82	.322	.966	25.9	19	4	0	0
						15	11*	5	5
9	612	136	.900	.900	6.9	8	4	4	4
						4	1	1	1
10	530	319	.415	.831	3.7	19	1	0	0
						10	1	0	0
						8	2	2	2
11	786	367	2.142	.714	1.3	10	0	1	1
						8	1	2	2
12	83	149	.557	.557	.7	23	1	1	1
13	683	379	.901	.901	7.8	19	2	2	2
14	517	103	.717	.837	3.0	15	7	6	6
15	146	449	.325	.325	.2	23	1	1	1
16	268	205	.654	.654	1.0	19	2	2	2
17	622	122	.637	.850	3.5	19	1	0	0
						15	7	6	6
18	1177	119	1.648	.899	5.8	15	0	9	9
						8	6	2	2
19	96	112	.857	.857	5.1	23	1	1	1
20	254	169	.501	.751	1.9	19	3	2	2
21	782	103	.844	.949	15.7	15	9	8	8
22	328	86	1.271	.953	18.4	8	3	4	4
23	225	221	.509	.509	.4	10	2	2	2
24	30	63	.476	.476	.4	11	1	1	1
25	982	502	.326	.978	43.2	8	6	2	2
26	5	129	.019	.039	.0	10	2	1	1

*Station No. 8, Grade 15 - present staffing is 5 rather than 11 workers.

Table III
CASE I-SOLUTION (Con't)
(OLD CBA)

CENTER 2: CORAM

	A	B	C	D	E	F	G	H	I
ST #	ARRIV RATE #/WK	SERVI RATE #/WK	PRSNT UTIL	OPT UTIL	AVE # IN QUEUE	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS	OPT STAFF
27	123	171	.719	.719	1.8	27	1	1	1
28	448	393	1.140	.570	.5	10	0	1	1
						8	1	1	1
29	140	254	.551	.551	.7	23	1	1	1
30	252	148	1.703	.851	4.5	19	1	1	1
						15	0	1	1
31	1036	148	.778	.875	4.4	19	3	3	3
						15	6	5	5
32	1022	173	1.477	.844	3.2	15	0	3	3
						10	1	1	1
						8	3	3	3
33	497	327	.760	.760	2.1	19	1	1	1
						8	1	1	1
34	119	191	.623	.623	1.0	8	1	1	1
35	85	221	.385	.385	.2	23	1	1	1
36	217	133	1.632	.816	3.2	19	1	1	1
						15	0	1	1
37	734	195	.538	.941	13.9	15	7	4	4
38	481	84	1.145	.954	18.3	8	5	6	6
39	120	302	.397	.397	.3	23	1	1	1
40	322	243	1.325	.663	1.0	19	1	1	1
						15	0	1	1
41	785	131	.856	.856	3.6	15	7	7	7
42	135	180	.750	.750	2.2	23	1	1	1
43	364	237	1.536	.768	2.2	19	1	1	1
						15	0	1	1
44	658	78	1.054	.937	11.9	15	8	8	8
						10	0	1	1
45	273	101	.901	.901	7.5	8	3	3	3
46	114	346	.165	.329	.2	10	2	1	1
47	176	262	.672	.672	1.4	15	1	1	1
48	1420	610	1.164	.776	2.1	10	0	1	1
						8	2	2	2
49	89	115	.774	.774	2.6	10	1	1	1

Table III
CASE I-SOLUTION (Con't)
(OLD CBA)

CENTER 3: SMITHTOWN,

	A	B	C	D	E	F	G	H	I
ST #	ARRIV RATE #/WK	SERVI RATE #/WK	PRSNT UTIL	OPT UTIL	AVE # IN QUEUE	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS	OPT STAFF
50	24	32	.750	.750	2.3	27	1	1	1
51	37	163	.227	.227	.1	10	1	1	1
52	71	260	.273	.273	.1	23	1	1	1
53	188	245	.767	.767	2.5	19	1	1	1
54	347	74	.782	.938	12.8	15	6	5	5
55	36	91	.396	.396	.3	19	1	1	1
56	319	225	1.418	.709	1.4	8	1	2	2
57	63	80	.394	.787	2.9	15	1	1	1
						8	1	0	0
58	110	82	.671	.671	1.1	23	2	2	2
59	614	180	1.706	.853	4.0	19	2	2	2
						15	0	2	2
60	868	94	.839	.923	8.9	19	1	1	1
						15	10	9	9
61	1145	345	.830	.830	3.2	8	4	4	4
62	202	113	1.788	.894	7.1	10	0	1	1
						8	1	1	1
63	33	127	.260	.260	.1	19	1	1	1
64	46	168	.274	.274	.1	15	1	1	1
65	124	180	.138	.230	.0	1	5	3	3
66	21	79	.266	.266	.1	23	1	1	1
67	83	74	1.122	.561	.5	19	1	2	2
68	515	99	.867	.867	4.3	15	6	6	6
69	210	106	1.981	.660	.8	19	1	3	3
70	375	104	1.202	.901	7.2	10	0	1	1
						8	3	3	3
71	64	154	.416	.416	.3	10	1	1	1
72	150	163	.307	.920	10.6	15	1	0	0
						10	2	1	1
73	343	537	.639	.639	1.1	1	1	1	1
74	3930	695	.808	.942	13.9	11	1	1	1
						8	6	5	5
75	165	76	.724	.724	1.4	9	1	1	1
						8	2	2	2

Table III
CASE I-SOLUTION (Con't)
(OLD CBA)

CENTER 4: HUNTINGTON

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
76	19	38	.500	.500	.5	27	1	1	1
77	58	63	.921	.921	10.7	10	1	1	1
78	518	267	1.940	.970	30.9	23	1	1	1
						19	0	1	1
79	170	188	.904	.904	8.5	19	1	1	1
80	509	94	.902	.902	6.9	15	6	6	6
81	270	95	.947	.947	16.2	8	3	3	3
82	672	821	.819	.819	3.7	15	1	1	1
83	13	34	.382	.382	.2	8	1	1	1
84	100	184	.543	.543	.6	23	1	1	1
85	317	195	1.626	.813	3.2	19	1	1	1
						15	0	1	1
86	586	103	.948	.948	15.8	15	6	6	6
87	298	110	.903	.903	7.7	8	3	3	3
88	70	66	1.061	.530	.4	23	1	1	1
						19	0	1	1
89	143	153	.935	.935	13.4	19	1	1	1
90	429	75	.953	.953	17.9	15	6	6	6
91	91	145	.628	.628	1.1	23	1	1	1
92	462	94	1.229	.819	2.5	15	4	5	5
						10	0	1	1
93	193	106	.910	.910	8.8	8	2	2	2
94	194	134	.724	.724	1.6	10	2	2	2
95	244	364	.670	.670	1.4	12	1	1	1
96	852	610	.698	.698	1.3	8	2	2	2
97	33	98	.337	.337	.2	19	1	1	1
98	254	278	.457	.228	.0	1	2	4	4
99	35	69	.507	.507	.5	15	1	1	1

Table III
CASE I-SOLUTION (Con't)
(OLD CBA)

CENTER 5: RIVERHEAD

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
100	9	35	.257	.257	.1	27	1	1	1
101	137	181	.757	.757	2.4	10	1	1	1
102	138	281	.491	.491	.5	23	1	1	1
103	50	118	.424	.424	.3	19	1	1	1
104	377	113	.667	.834	3.3	19	2	1	1
						15	3	3	3
105	457	149	1.022	.767	1.8	6	3	4	4
106	229	249	.920	.920	10.5	15	1	1	1
107	113	101	1.119	.559	.5	6	1	2	2
108	113	204	.554	.554	.7	23	1	1	1
109	184	100	1.840	.920	10.1	19	1	1	1
						15	0	1	1
110	630	110	.955	.955	18.4	19	2	2	2
						15	4	4	4
111	1055	491	.537	.716	1.3	10	1	0	0
						6	2	2	2
						4	1	1	1
112	35	55	.636	.636	1.1	21	1	1	1
113	170	207	.821	.821	3.8	19	1	1	1
114	697	117	1.191	.851	3.4	19	1	3	3
						15	4	4	4
115	106	113	.938	.938	14.2	23	1	1	1
116	187	69	.678	.903	7.7	15	4	3	3
117	232	94	1.234	.823	3.2	15	0	1	1
						10	1	1	1
						6	1	1	1
118	270	246	.366	.549	.5	10	3	2	2
119	147	229	.642	.642	1.2	15	1	1	1
120	1382	618	1.118	.745	1.6	11	1	1	1
						10	0	1	1
						8	1	1	1
121	36	94	.383	.383	.2	19	1	1	1
122	98	168	.583	.583	.8	1	1	1	1
123	3	114	.026	.026	.0	1	1	1	1
124	44	88	.500	.500	.5	10	1	1	1

Table III
CASE I-SOLUTION (Con't)
(OLD.CBA)

CENTER 6: MASTIC

	A	B	C	D	E	F	G	H	I
ST #	ARRIV RATE #/WK	SERVI RATE #/WK	PRSNT UTIL	OPT UTIL	AVE # IN QUEUE	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS	OPT STAFF
125	54	96	.563	.563	.7	27	1	1	1
126	242	386	.627	.627	1.1	10	1	1	1
127	26	142	.183	.183	.0	23	1	1	1
128	81	147	.551	.551	.7	19	1	1	1
129	350	115	.609	.761	1.7	15	5	4	4
130	128	141	.454	.908	8.9	8	2	1	1
131	63	92	.685	.685	1.5	8	1	1	1
132	264	202	.653	.653	1.0	15	1	1	1
						8	1	1	1
133	106	261	.406	.406	.3	23	1	1	1
134	237	135	.439	.878	5.9	15	4	2	2
135	83	175	.474	.474	.4	10	1	1	1
136	252	108	1.167	.778	2.1	8	2	3	3
137	100	138	.725	.725	1.9	23	1	1	1
138	336	120	1.400	.933	12.3	19	2	2	2
						15	0	1	1
139	929	171	.604	.905	7.2	19	1	0	0
						15	8	6	6
140	747	296	.841	.841	3.8	8	3	3	3
141	127	230	.276	.552	.7	10	2	1	1
142	414	600	.690	.690	1.5	15	1	1	1
143	980	662	.740	.740	1.8	8	2	2	2
144	12	30	.400	.400	.3	10	1	1	1

Table III
CASE I-SOLUTION (Con't)
(OLD CBA)

CENTER 7: AMITYVILLE

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
145	44	94	.468	.468	.4	27	1	1	1
146	84	143	.587	.587	.8	8	1	1	1
147	191	148	1.291	.645	.9	23	1	1	1
						19	0	1	1
148	100	110	.909	.909	9.1	19	1	1	1
149	443	78	1.136	.947	15.2	19	1	1	1
						15	4	4	4
						10	0	1	1
150	961	373	.859	.859	4.5	8	2	2	2
						4	1	1	1
151	126	156	.808	.808	3.4	8	1	1	1
152	376	217	1.733	.866	5.2	8	1	2	2
153	107	149	.718	.718	1.8	23	1	1	1
154	406	188	1.080	.720	1.3	19	2	2	2
						15	0	1	1
155	1192	140	1.064	.946	14.4	19	1	1	1
						15	0	1	1
						13	7	7	7
156	476	226	1.053	.702	1.2	8	2	3	3
157	369	254	1.453	.726	1.6	23	1	1	1
						19	0	1	1
158	338	99	.854	.854	4.1	13	4	4	4
159	103	187	.551	.551	.7	10	1	1	1
160	560	165	3.394	.848	3.8	8	1	4	4
161	179	191	.469	.937	14.0	10	2	1	1
162	171	259	.660	.660	1.3	11	1	1	1
163	494	545	.453	.453	.2	8	2	2	2
164	175	284	.308	.308	.1	10	2	2	2

Table III
CASE I-SOLUTION (Con't)
(OLD CBA)

CENTER 8: PATCHOGUE

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
165	75	103	.728	.728	2.0	27	1	1	1
166	240	386	.622	.622	1.0	10	1	1	1
167	41	104	.394	.394	.3	23	1	1	1
168	214	86	.622	.829	3.4	19	2	2	2
						15	2	1	1
169	383	155	.824	.824	3.2	8	3	3	3
170	76	192	.396	.396	.3	19	1	1	1
171	21	137	.153	.153	.0	8	1	1	1
172	218	349	.625	.625	1.0	23	1	1	1
173	534	227	1.176	.784	2.3	19	2	2	2
						15	0	1	1
174	1094	162	.965	.965	24.5	15	7	7	7
175	95	104	.913	.913	9.6	8	1	1	1
176	149	264	.564	.564	.7	23	1	1	1
177	357	185	.643	.965	26.0	15	3	2	2
178	429	192	.745	.745	1.6	8	3	3	3
179	55	83	.331	.663	1.3	10	2	1	1
180	303	226	.670	.670	1.1	15	1	1	1
						11	1	1	1
181	298	480	.621	.621	1.0	8	1	1	1
182	8	29	.276	.276	.1	10	1	1	1

CENTER 9: WYANDANCH

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
183	128	116	1.103	.552	.5	27	1	1	1
						23	0	1	1
184	107	167	.641	.641	1.1	17	1	1	1
185	173	330	.524	.524	.6	15	1	1	1
186	287	303	.947	.947	17.0	10	1	1	1
187	582	630	.924	.924	11.2	8	1	1	1

case, tends to equalize the workload of the stations and the length of queue of matters waiting to be processed, through the reassignment of unbusy staff members to the busiest stations. The staff reassignment criteria were specified in the staff exchangeability matrix. Finally, this analysis indicates that the busy stations are composed primarily of QC Examiners, Clerical Staff, and very few supervisors.

IV. STAFFING SOLUTIONS FOR THE NEW CBA SYSTEM

Although the CBA operational structure has been streamlined several months after the completion of the data collection phase, we have decided to animate the new CBA operation and derive staffing solutions from the existing data base. It was felt that results generated by this animated analysis will provide management with information concerning the expected performance of the "new" CBA system.

Since the new CBA was not in operation at the time data was collected, it was necessary to conduct a transitional analysis for the purpose of deriving animated staffing solutions for problems identified earlier by scenarios (cases) No. 2-4, in particular. In doing so we assumed that the new system will continue to handle the program related matters listed earlier in Table I. For exploratory purposes we postulated that the new CBA system will be composed of the following administrative entities or service centers:

1. Bayshore
2. Coram
3. Smithtown
4. Huntington
5. Riverhead
6. Mastic
7. Patchogue (defunct)
8. Wyandanch
9. Chronic Care

These entities (centers) along with their complementary stations are identified in Table IV. The stations' composition in each of the newly created centers were derived through an extensive analysis of both the "old" and "new" centers' caseload, arrival rate of cases, existing and anticipated work flow patterns between these stations. This analysis suggested that the newly structured:

- Bay Shore Center should have 31 processing stations formerly associated with the defunct Islip and Amityville Centers;
- Wyandanch Center should have stations which are analogous to those found in the Hungtington Center; and
- Chronic Care Unit is likely to provide MA and an array of related (PA) services to its clients. Although we recognized that this unit's mission is to provide determination and recertification

Table IV
The Restructured CBA's Centers and Corresponding Stations

I. BAY SHORE CENTER

Station Code and Name

1	Center Manager
2	Administrative Clerk
3	Eligibility Supervisor I
4	Eligibility QC Examiner I
5	Eligibility Examiners I
6	Eligibility Supervisor II
7	Elibibility QC Examiner II
8	Eligibility Examiner II
9	Eligibility Clerical Unit
10	Receptionist/Reception Examiner
11	File Room Clerk
12	Income Maintenance Supervisor I *
13	Income Maintenance QC Examiners I
14	Income Maintenance Examiners I
15	Income Maintenance Supervisor II
16	Income Maintenance QC Examiner II
17	Income Maintenance Examiner II
18	Income Maintenance Clerical
19	Medicaid Supervisor
20	Medicaid QC Examiner
21	Medicaid Examiner
22	Medicaid Clerical
23	Medicaid Senior Clerk
24	Under Care Supervisor
25	Under Care QC Examiner
26	Under Care Examiner
27	Under Care Clerk
28	Housing Workers
29	Data Entry Supervisor
30	Data Entry Operator
31	CAP Worker

II. CORAM CENTER STATIONS

Station Code and Name

32	Center Manager
33	Administrative Clerk
34	Eligibility Supervisor
35	Eligibility Quality Control
36	Eligibility Interviewers
37	Eligibility Clerical
38	Receptionist
39	File Bank
40	Undercare (IM) Supervisor*

*The terms Income Maintenance and Undercare (TM) are synonomous.

Table IV (Con't) The Restructured CBA

41	Undercare (IM) Quality Control
42	Undercare (IM) Examiners
43	Undercare (IM) Clerical
44	Undercare (IM) Supervisor
45	Undercare (IM) Quality Control
46	Undercare (IM) Examiners
47	Medicaid Supervisor
48	Medicaid Quality Control
49	Medicaid Examiners
50	Medicaid Clerical
51	Housing
52	Data Entry Supervisor
53	Data Entry Operators
54	Client Assistance Program

III. SMITHTOWN CENTER STATIONS

Station Code & Name

55	Center Manager
56	Administrative Clerk
57	Eligibility Supervisor
58	Eligibility QC
59	Eligibility Examiners
60	Hospital Examiner
61	Eligibility Clerks
62	Receptionist/Screener
63	Undercare (IM) Supervisors
64	Undercare (IM) QC
65	Undercare (IM) Examiners
66	Undercare (IM) Clerks
67	File Clerk
68	Supervisor Emergency Fuel
69	Emergency Fuel QC
70	Temporary Fuel Workers
71	Medicaid Supervisor
72	Medicaid QC
73	Medicaid Examiners
74	Chronic Care Examiner
75	Medicaid Clerks
76	CAP Worker
77	Housing Workers
78	Data Entry Supervisor
79	Data Entry Operators
80	Central Mail Room

IV. HUNTINGTON CENTER STATIONS

Station and Code Name

81	Center Manager

Table IV (Con't) The Restructured CBA

82 Administrative Clerk
83 Eligibility Supervisor
84 Eligibility Quality Control
85 Eligibility Examiners
86 Eligibility Clerical
87 Receptionist/Screener
88 File Bank
89 Income Maintenance Supervisor
90 Quality Control Examiner
91 Income Maintenance Examiners
92 Income Maintenance Clerical
93 Income Maintenance Supervisor
94 Quality Control Examiner
95 Income Maintenance Examiners
96 Medicaid Supervisor
97 Medicaid Examiners
98 Medicaid Clerical
99 Housing Workers
100 Data Entry Supervisor
101 Data Entry Operators
102 HEAP (Emergency Fuel) Supervisor
103 HEAP Workers
104 CAP Worker

V. RIVERHEAD CENTER STATIONS

105 Center Manager
106 Administrative Clerk
107 Eligibility Supervisor
108 Quality Control Examiner
109 Eligibility Examiners
110 Eligibility Clerical
111 Reception/Screener
112 File Bank
113 Income Maintenance Supervisor I
114 Quality Control Examiner I
115 Income Maintenance Examiners
116 Income Maintenance Clerical
117 Income Maintenance Supervisor II
118 Quality Control Examiner II
119 Income Maintenance Examiners
120 Medicaid Supervisors
121 Medicaid Examiners
122 Medicaid Clerical
123 Housing Workers
124 Data Entry Supervisor
125 Data Entry Operators
126 Emergency Fuel Supervisor
127 Emergency Fuel Quality Control Examiner
128 Emergency Fuel Workers
129 CAP Worker

Table IV (Con't) The Restructured CBA

VI. MASTIC CENTER STATIONS

Station Code and Name	
130	Center Manager
131	Administrative Clerk
132	Eligibility Supervisor
133	Eligibility QC Examiner
134	Eligibility Examiners
135	Eligibility Clerks
136	File Bank Clerk
137	Reception/Screening
138	Medicaid Supervisor
139	Medicaid Examiners
140	Medicaid Sr. Clerk Chronic Care Maintenance
141	Medicaid Clerks
142	Undercare (IM) Supervisor
143	Undercare (IM) QC Examiners
144	Undercare (IM) Examiners
145	Undercare (IM) Clerks
146	Housing Workers
147	Data Entry Supervisor
148	Data Entry Operators
149	CAP Worker

VII. PATCHOGUE CENTER DEFUNCT

VIII. WYANDANCH CENTER

Station Code and Name	
168	Center Manager
169	Administrative Clerk
170	Eligibility Supervisor
171	Eligibility Quality Control
172	Eligibility Examiners
173	Eligibility Clerical
174	Receptionist/Screener
175	File Bank
176	Income Maintenance Supervsior
177	Quality Control Examiner
178	Income Maintenance Examiners
179	Income Maintenance Clerical
180	Income Maintenance Supervsior
181	Quality Control Examiner
182	Income Maintenance Examiners
183	Medicaid Supervisor
184	Medicaid Examiner
185	Medicaid Clerical
186	Housing Workers

Table IV (Con't) The Restructured CBA

187	Data Entry Supervisor
188	Data Entry Operators
189	HEAP (Emergency Fuel) Supervsior
190	HEAP Workers
191	CAP Worker

IX. CHRONIC CARE CENTER†

Station Code and Name (Tentative)		Station Name (Final)
192	Center Manager	Unit Manager
193	Administrative Cler	Supervisor (2)
194	Eligibility Supervisor I	Q.C. Examiner
195	Eligibility QC Examiner I	Examiner (10)
196	Eligibility Examiners I	Med. Max Examiner (2)
197	Eligibility Supervisor II	Sr. Clerk
198	Eligibility QC Examiner II	Clerk Typist (Admin. Clerk)
199	Eligibility Examiner II	Clerk Typist (5)
200	Eligibility Clerical Unit	
201	Receptionist/Reception Examiner	
202	File Room Clerk	
203	Income Maintenance Supervisor I	
204	Income Maintenance QC Examiner I	
205	Income Maintenance Examiners I	
206	Income Maintenance Supervisor II	
207	Income Maintenance QC Examiner II	
208	Income Maintenance Examiner II	
209	Income Maintenance Clerical	
210	Medicaid Supervisor	
211	Medicaid QC Examiner	
212	Medicaid Examiners	
213	Medicaid Clerical	
214	Medicaid Senior Clerk	
215	Under Care Supervisor	
216	Under Care QC Examiner	
217	Under Care Examiner	
218	Under Care Clerk	
219	Housing Workers	
220	Data Entry Supervisor	
221	Data Entry Operator	
222	CAP Worker	

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†The "Station Code and Name (Tentative)" column indicates the set of stations used in the study; whereas, the "Station Name (Final)" column indicates the final configuration of stations within the Chronic Care Unit.

services to medicaid clients who have long term care needs, the (MA) workflow data analysis suggested that these clients are likely to request additional (non-medical) services. For exploratory purposes, therefore, it was decided that this unit should be composed of 31 stations as indicated in Table IV.

The chronic care unit was subsequently finalized by management into a structure which is different from the one used in this study. Since this analysis suggests that the (non-medical) activities or matters processed by stations not in the final list must be processed somehow, the reassignment of seemingly surplus workers affiliated with these non-existent stations to the appropriate centers should be determined by management. Otherwise, a shortage of staffing is likely to occur in certain centers.

Finally, although the new CBA plan calls for the abolishment of the Patchogue Center, 18 of its workers were retained as a "slack or pool" of workers that can be reassigned by management to other stations during the transition from the "old" to the "new" system. These workers are identified by grade and station in Tables V-VII-Patchogue center's results.

A. Case II - Solutions

Recall that Case 2 solutions deal with a situation in which management faces an over 12% increase in the demand for services (observed during May 1990). To address this demand problem, the solutions for the second scenario (Case 2) were derived through the application of Fox's (1966) resource allocation model. Since the model calls for the specification of a single objective function and a set of constraints, the solutions for this case were derived by specifying the number of matters waiting to be processed, as the objective function.

The results of this model's application can be found in Table V. A cursory examination of this table will reveal that 481 workers and a weekly payroll budget of $230,756 are needed to achieve a steady state operational environment, for the new system services. The optimal distribution of these workers over the centers' stations can be found in Col. I, whereas the present (May 1990) staffing level by station is tabulated in Col. "G" of Table V. In other words, the (Fall 1989) weekly payroll budget of $217,777 must be increased by approximately 6% and the staff level by 7.8% in order to meet the 13% increase in the demand for services. These figures include the 18 workers retained in the Patchogue Center for reassignment by management to other stations of the "new" CBA.

Table V
CLIENT BENEFITS STUDY
Case II Solutions
(NEW CBA)

[CASE01]
NUMBER OF REQUIRED EMPLOYEES : 481
NUMBER OF PRESENT EMPLOYEES : 446 (Fall of 1989)
TOTAL REQUIRED WEEKLYPAYROLL : $ 230756.00
TOTAL PRESENT WEEKLY PAYROLL : $ 217777.00
SYSTEM OPTIMIZATION INDEX : 1262.3420

CENTER 1: BAYSHORE

	A	B	C	D	E	F	G	H
ST #	ARRIV RATE #/WK	SERVI RATE #/WK	PRSNT UTIL	OPT UTIL	AVE # IN QUEUE	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS
1	79	90	.440	.880	6.4	27	2	1
2	216	105	.687	.687	1.0	10	1	1
						8	2	2
3	227	144	.784	.784	2.5	23	2	2
4	426	120	1.775	.887	6.0	19	2	2
						15	0	2
5	497	62	.789	.986	67.8	19	1	0
						15	9	8
6	14	48	.296	.296	.1	23	1	1
7	39	68	.566	.566	.7	19	1	1
8	361	75	.321	.963	23.5	19	4	0
						15	11*	5
9	1200	159	.939	.939	12.5	8	6	6
						4	2	2
10	585	222	.527	.879	5.7	19	1	0
						10	1	0
						8	3	3
11	468	105	2.231	.893	6.2	8	2	5
12	74	149	.498	.498	.5	23	1	1
13	609	380	.800	.800	2.8	19	2	2
14	461	98	.666	.932	11.5	15	7	5
15	130	450	.291	.291	.1	23	1	1
16	239	200	.595	.595	.7	19	2	2
17	557	120	.581	.930	10.9	19	1	0
						15	7	5
18	706	119	.989	.989	84.0	15	0	2
						8	6	4
19	195	111	.872	.872	5.6	23	2	2
20	227	165	.459	.688	1.2	19	3	2
21	1000	101	.761	.899	5.8	19	0	2
						15	9	9
						13	4	0
22	344	81	1.064	.851	3.8	8	4	5
23	95	140	.680	.680	1.4	10	1	1
24	95	149	.640	.640	1.1	23	1	1
25	362	188	.963	.963	24.9	19	2	2
26	1063	140	.949	.949	15.8	19	1	1
						13	7	7
27	424	225	.941	.941	14.4	8	2	2
28	359	132	.682	.909	8.3	10	4	3
29	179	161	.558	.558	.5	11	2	2
30	3202	524	.764	.873	4.5	8	8	7
31	161	129	.312	.625	.8	10	4	2

*See footnote found on page 27A-1, Table III.

Table V Con't
(Case II NEW CBA)

CENTER 2: CORAM

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
32	139	170	.818	.818	3.7	27	1	1
33	509	393	1.295	.648	.9	8	1	2
34	159	234	.681	.681	1.5	23	1	1
35	117	147	.797	.797	3.1	19	1	1
36	1176	152	.854	.961	21.7	19	3	2
						15	6	6
37	664	185	.893	.893	6.4	10	1	1
						8	3	3
38	564	330	.856	.856	4.7	19	1	1
						8	1	1
39	134	191	.706	.706	1.7	8	1	1
40	97	240	.405	.405	.3	23	1	1
41	99	135	.736	.736	2.1	19	1	1
42	833	192	.620	.869	4.6	15	7	5
43	514	96	1.072	.894	6.1	8	5	6
44	137	300	.457	.457	.4	23	1	1
45	215	245	.875	.875	6.1	19	1	1
46	891	132	.965	.965	24.5	15	7	7
47	68	102	.675	.675	1.4	23	1	1
48	252	249	1.014	.507	.4	19	1	1
						15	0	1
49	500	68	.907	.907	7.1	15	8	8
50	206	81	.842	.842	3.8	8	3	3
51	129	345	.188	.377	.2	10	2	1
52	200	261	.767	.767	2.5	15	1	1
53	910	668	.681	.681	1.2	8	2	2
54	90	98	.919	.919	10.5	10	1	1

Table V . Con't

CENTER 3: SMITHTOWN (Case II NEW CBA)

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
55	23	32	.730	.730	2.0	27	1	1
56	28	147	.193	.193	.0	10	1	1
57	68	260	.265	.265	.1	23	1	1
58	182	225	.811	.811	3.5	19	1	1
59	337	77	.721	.866	4.4	15	6	5
60	35	77	.455	.455	.4	19	1	1
61	209	225	.932	.932	12.9	8	1	1
62	60	66	.457	.914	9.8	15	1	0
						8	1	1
63	107	81	.657	.657	1.0	23	2	2
64	177	140	.629	.629	.8	19	2	2
65	844	92	.826	.908	6.9	19	1	0
						15	10	10
66	1114	345	.808	.808	2.6	8	4	4
67	71	41	1.690	.845	4.2	8	1	2
68	32	120	.269	.269	.1	19	1	1
69	44	155	.287	.287	.1	15	1	1
70	39	180	.043	.217	.1	0	5	1
71	14	87	.163	.163	.0	23	1	1
72	55	72	.774	.774	2.7	19	1	1
73	350	102	.572	.858	4.3	15	6	4
74	42	87	.490	.490	.5	19	1	1
75	92	77	.394	.592	.6	8	3	2
76	61	117	.524	.524	.6	10	1	1
77	145	165	.295	.884	6.8	15	1	0
						10	2	1
78	333	408	.818	.273	.0	0	1	3
79	3826	743	.735	.857	3.8	11	1	0
						8	6	6
80	160	75	.703	.703	1.2	9	1	1
						8	2	2

Table 7. Con't
(Case II NEW CBA)

CENTER 4: HUNTINGTON

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
81	9	33	.280	.280	.1	27	1	1
82	29	56	.517	.517	.6	10	1	1
83	213	245	.866	.866	5.6	23	1	1
84	85	182	.466	.466	.4	19	1	1
85	255	93	.454	.907	8.1	15	6	3
86	152	78	.645	.967	28.2	8	3	2
87	234	326	.717	.717	1.8	15	1	1
88	7	38	.182	.182	.0	8	1	1
89	49	183	.270	.270	.1	23	1	1
90	158	195	.812	.812	3.5	19	1	1
91	293	90	.543	.815	2.7	15	6	4
92	149	111	.448	.672	1.1	8	3	2
93	35	62	.563	.563	.7	23	1	1
94	72	144	.500	.500	.5	19	1	1
95	296	75	.658	.987	73.2	15	6	4
96	7	162	.044	.044	.0	23	1	1
97	74	581	.032	.128	.0	15	4	1
98	21	105	.101	.203	.1	8	2	1
99	117	96	.612	.612	.7	10	2	2
100	191	230	.833	.833	4.2	12	1	1
101	427	366	.582	.582	.6	8	2	2
102	16	98	.166	.166	.0	19	1	1
103	126	204	.311	.311	.1	0	2	2
104	17	62	.276	.276	.1	15	1	1

Table V Con't
(Case II. NEW CBA)

CENTER 5: RIVERHEAD

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
105	3	35	.101	.101	.0	27	1	1
106	140	170	.824	.824	3.9	10	1	1
107	142	318	.447	.447	.4	23	1	1
108	21	117	.181	.181	.0	19	1	1
109	387	113	.685	.856	4.2	19	2	1
						15	3	3
110	469	147	1.065	.799	2.4	6	3	4
111	235	249	.945	.945	16.3	15	1	1
112	116	101	1.155	.578	.6	6	1	2
113	116	204	.573	.573	.8	23	1	1
114	189	99	1.898	.949	17.1	19	1	1
						15	0	1
115	648	110	.981	.981	49.7	19	2	2
						15	4	4
116	1085	491	.552	.737	1.5	10	1	0
						6	2	2
						4	1	1
117	28	53	.526	.526	.6	21	1	1
118	174	207	.842	.842	4.5	19	1	1
119	523	117	.894	.894	6.4	19	1	1
						15	4	4
120	71	98	.717	.717	1.8	23	1	1
121	81	68	.296	.592	.6	15	4	2
122	157	93	.837	.837	3.9	10	1	1
						6	1	1
123	277	245	.377	.565	.5	10	3	2
124	211	228	.926	.926	11.6	15	1	1
125	856	638	.671	.671	1.1	11	1	1
						8	1	1
126	14	75	.189	.189	.0	19	1	1
127	21	177	.120	.120	.0	0	1	1
128	0	113	0.000	0.000	0.0	0	1	1
129	49	90	.552	.552	.7	10	1	1

Table V Con't
(Case II, NEW CBA)

CENTER 6: MASTIC

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
130	85	117	.728	.728	2.0	27	1	1
131	373	420	.888	.888	7.1	10	1	1
132	40	141	.285	.285	.1	23	1	1
133	124	147	.848	.848	4.7	19	1	1
134	539	114	.939	.939	13.2	15	5	5
135	197	140	.701	.701	1.4	8	2	2
136	97	92	1.056	.528	.4	8	1	2
137	344	255	.675	.675	1.1	15	1	1
						8	1	1
138	28	279	.102	.102	.0	23	1	1
139	46	210	.055	.220	.1	15	4	1
140	7	360	.020	.020	.0	10	1	1
141	95	111	.432	.864	5.5	8	2	1
142	154	167	.917	.917	10.1	23	1	1
143	110	120	.459	.917	10.1	19	2	1
144	1432	189	.842	.947	15.0	19	1	1
						15	8	7
145	1151	296	1.296	.972	32.6	8	3	4
146	195	230	.425	.850	4.8	10	2	1
147	578	600	.964	.964	25.7	15	1	1
148	1196	630	.950	.950	17.5	8	2	2
149	18	30	.604	.604	.9	10	1	1

Table V Con't
(NEW CBA)

CENTER 7: PATCHOGUE - DEFUNCT (STAFF TRANSFERRED TO OTHER CTRS.)

*ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS**
150	0	102	0.000	0.000	0.0	27	1	1
151	0	386	0.000	0.000	0.0	10	1	1
152	0	104	0.000	0.000	0.0	23	1	1
153	0	86	0.000	0.000	0.0	19	2	0
						15	2	1
154	0	155	0.000	0.000	0.0	8	3	1
155	0	192	0.000	0.000	0.0	19	1	1
156	0	137	0.000	0.000	0.0	8	1	1
157	0	348	0.000	0.000	0.0	23	1	1
158	0	227	0.000	0.000	0.0	19	2	1
159	0	162	0.000	0.000	0.0	15	7	1
160	0	104	0.000	0.000	0.0	8	1	1
161	0	264	0.000	0.000	0.0	23	1	1
162	0	185	0.000	0.000	0.0	15	3	1
163	0	192	0.000	0.000	0.0	8	3	1
164	0	83	0.000	0.000	0.0	10	2	1
165	0	225	0.000	0.000	0.0	15	1	0
						11	1	1
166	0	273	0.000	0.000	0.0	8	1	1
167	0	29	0.000	0.000	0.0	10	1	1

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*The corresponding old stations' number and name of this defunct center are listed in Table II, p. 26A-5.

** Slack or pool of workers that can be used by management to assure a smooth transition from the old to new CBA system.

Table V Con't
(Case II NEW CBA)

CENTER 8: WYANDANCH

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
168	9	33	.280	.280	.1	27	1	1
169	40	56	0.000	.710	1.7	15	0	1
170	213	249	0.000	.855	5.1	19	0	1
171	121	185	0.000	.655	1.2	15	0	1
172	383	93	0.000	.817	2.6	15	0	4
						10	0	1
173	248	78	0.000	.787	2.1	8	0	4
174	319	326	0.000	.977	41.6	15	0	1
175	7	38	0.000	.182	.0	8	0	1
176	71	183	0.000	.386	.2	19	0	1
177	71	90	0.000	.789	2.9	15	0	1
178	518	92	0.000	.929	10.6	19	0	1
						15	0	5
179	277	111	0.000	.835	3.6	8	0	3
180	42	62	0.000	.676	1.4	19	0	1
181	126	144	0.000	.880	6.5	15	0	1
182	436	75	0.000	.970	29.2	19	0	1
						15	0	1
						10	0	4
183	21	165	0.000	.129	.0	19	0	1
184	149	165	0.000	.904	8.5	15	0	1
185	120	66	0.000	.914	9.3	8	0	2
186	171	102	1.681	.841	4.0	10	1	1
						8	0	1
187	358	230	0.000	.779	2.4	12	0	2
188	344	366	.940	.940	14.6	8	1	1
189	16	98	.166	.166	.0	17	1	1
190	160	204	.785	.392	.1	15	1	0
						0	0	2
191	24	62	0.000	.389	.2	15	0	1

Table V Con't
(Case II NEW CBA)

CENTER 9: CHRONIC CARE*

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
192	46	102	0.000	.452	.4	27	0	1
193	156	111	0.000	.704	1.4	8	0	2
194	39	204	0.000	.191	.0	19	0	1
195	14	111	0.000	.128	.0	15	0	1
196	267	66	0.000	.811	2.5	15	0	3
						10	0	2
197	8	51	0.000	.160	.0	19	0	1
198	14	83	0.000	.169	.0	15	0	1
199	194	68	0.000	.942	14.4	15	0	3
200	648	159	0.000	.811	2.5	4	0	5
201	315	122	0.000	.855	4.4	15	0	2
						8	0	1
202	53	144	0.000	.370	.2	8	0	1
203	14	177	0.000	.080	.0	19	0	1
204	114	380	0.000	.302	.1	15	0	1
205	174	53	0.000	.807	2.5	15	0	3
						10	0	1
206	17	354	0.000	.050	.0	19	0	1
207	24	62	0.000	.389	.2	15	0	1
208	31	111	0.000	.288	.1	15	0	1
209	172	83	0.000	.685	1.0	8	0	3
210	129	45	0.000	.962	23.8	19	0	3
211	56	167	0.000	.338	.2	15	0	1
212	337	66	0.000	.852	3.6	15	0	4
						10	0	2
213	390	81	0.000	.964	24.6	8	0	5
217	606	140	0.000	.866	4.4	13	0	5
219	204	117	0.000	.875	5.7	8	0	2
220	21	48	0.000	.444	.4	11	0	1
221	1825	615	0.000	.989	91.3	8	0	3
222	92	129	0.000	.716	1.8	15	0	1

*The structure of the chronic care unit used in this study is different from the actual structure. For explanation, see pp. 28-29 of text.

A comparison of Table V results against those found in Table III will reveal that the optimal staff allocation solutions are not identical inasmuch as the new system is not identical to the old structure. The same can be said about the optimal utilization indices found in these tables. Also, note that in Case 2 solutions, the number of items waiting in a queue (see Col. E) has been increased for several stations. Nevertheless, in both Cases (1 & 2) the constraint regarding the total amount of time a matter spent in the system was met, inasmuch as the processing cycle of the case records was completed with 3.8 weeks or less.

B. Case III - Solutions

Case 3 solutions as was noted earlier deal with a situation in which the center's administrators of the new system face more than a 12% increase in the demand for services under a lean payroll budget configuration. To address this problem, the solutions for this third scenario (Case 3) were derived through a stepwise application of the resource allocation model. Since the model calls for the specification of a single objective function and a corresponding set of constraints, the solutions for this case were derived through:

- o The minimization of the length of queue of cases waiting to be processed first, and consequently;
- o The weekly payroll budget was specified as a second objective function to be minimized.

The results of this stepwise application of Fox's (1966) marginal analysis (or resource allocation) model, can be found in Table VI. A cursory examination of this table will reveal that at least 476 workers and a weekly payroll budget of $239,085 are needed to achieve a steady state operational environment, under a lean payroll budget configuration and about a 13% increase in demand for services. In other words, the Fall 1989 weekly payroll budget of $217,777 must be increased approximately 5.5% and the staff by 7.7% in order to meet the increase in the demand for services. Embedded in these figures is the "labor pool" found in the Patchogue Center. Notice again that these percentage increases in resource requirements are not identical due to non-linear relationships that exist between them, accentuated by the marginal analysis model.

C. Case IV - Solutions

Recall that Case 4-Scenario calls for deriving staffing solutions under a reduced weekly payroll budget situation which is five percent below the Fall 1989 configuration of $217,777. To ascertain these solutions, Fox's (1966) marginal

Table VI
CLIENT BENEFITS STUDY
- Case III Solutions

[CASE02] (NEW CBA)
NUMBER OF REQUIRED EMPLOYEES : 476
NUMBER OF PRESENT EMPLOYEES : 446 (Fall of 1989)
TOTAL REQUIRED WEEKLYPAYROLL : $ 229085.00
TOTAL PRESENT WEEKLY PAYROLL : $ 217777.00
SYSTEM OPTIMIZATION INDEX : 1351.4710
(Lean Budget Configuration/Min. cost solutions)

CENTER 1: BAYSHORE

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
1	79	90	.440	.880	6.4	27	2	1
2	216	105	.687	.687	1.0	10	1	1
						8	2	2
3	227	144	.784	.784	2.5	23	2	2
4	426	120	1.775	.887	6.0	19	2	2
						15	0	2
5	497	62	.789	.986	67.8	19	1	0
						15	9	8
6	14	48	.296	.296	.1	23	1	1
7	39	68	.566	.566	.7	19	1	1
8	361	75	.321	.963	23.5	19	4	0
						15	11*	5
9	1200	159	.939	.939	12.5	8	6	6
						4	2	2
10	585	222	.527	.879	5.7	19	1	0
						10	1	0
						8	3	3
11	468	105	2.231	.893	6.2	8	2	5
12	74	149	.498	.498	.5	23	1	1
13	609	380	.800	.800	2.8	19	2	2
14	461	98	.666	.932	11.5	15	7	5
15	130	450	.291	.291	.1	23	1	1
16	239	200	.595	.595	.7	19	2	2
17	557	120	.581	.930	10.9	19	1	0
						15	7	5
18	706	119	.989	.989	84.0	15	0	2
						8	6	4
19	195	111	.872	.872	5.6	23	2	2
20	227	165	.459	.688	1.2	19	3	2
21	1000	101	.761	.989	87.6	19	0	2
						15	9	9
						13	4	0
22	344	81	1.064	.851	3.8	8	4	5
23	95	140	.680	.680	1.4	10	1	1
24	95	149	.640	.640	1.1	23	1	1
25	362	188	.963	.963	24.9	19	2	2
26	1063	140	.949	.949	15.8	19	1	1
						13	7	7
27	424	225	.941	.941	14.4	8	2	2
28	359	132	.682	.909	8.3	10	4	3
29	179	161	.558	.558	.5	11	2	2
30	3202	524	.764	.873	4.5	8	8	7
31	161	129	.312	.625	.8	10	4	2

*See earlier footnote on page 27A-1, Table III.

Table VI Con't
(NEW CBA)

CENTER 2: CORAM

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
32	139	170	.818	.818	3.7	27	1	1
33	509	393	1.295	.648	.9	8	1	2
34	159	234	.681	.681	1.5	23	1	1
35	117	147	.797	.797	3.1	19	1	1
36	1176	152	.854	.961	21.7	19	3	2
						15	6	6
37	664	185	.893	.893	6.4	10	1	1
						8	3	3
38	564	330	.856	.856	4.7	19	1	1
						8	1	1
39	134	191	.706	.706	1.7	8	1	1
40	97	240	.405	.405	.3	23	1	1
41	99	135	.736	.736	2.1	19	1	1
42	833	192	.620	.869	4.6	15	7	5
43	514	96	1.072	.894	6.1	8	5	6
44	137	300	.457	.457	.4	23	1	1
45	215	245	.875	.875	6.1	19	1	1
46	891	132	.965	.965	24.5	15	7	7
47	68	102	.675	.675	1.4	23	1	1
48	252	249	1.014	.507	.4	19	1	1
						15	0	1
49	500	68	.907	.907	7.1	15	8	8
50	206	81	.842	.842	3.8	8	3	3
51	129	345	.188	.377	.2	10	2	1
52	200	261	.767	.767	2.5	15	1	1
53	910	668	.681	.681	1.2	8	2	2
54	90	98	.919	.919	10.5	10	1	1

Table VI Con't
(NEW CBA)

CENTER 3: SMITHTOWN

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
55	23	32	.730	.730	2.0	27	1	1
56	28	147	.193	.193	.0	10	1	1
57	68	260	.265	.265	.1	23	1	1
58	182	225	.811	.811	3.5	19	1	1
59	337	77	.721	.866	4.4	15	6	5
60	35	77	.455	.455	.4	19	1	1
61	209	225	.932	.932	12.9	8	1	1
62	60	66	.457	.914	9.8	15	1	0
						8	1	1
63	107	81	.657	.657	1.0	23	2	2
64	177	140	.629	.629	.8	19	2	2
65	844	92	.826	.908	6.9	19	1	0
						15	10	10
66	1114	345	.808	.808	2.6	8	4	4
67	71	41	1.690	.845	4.2	8	1	2
68	32	120	.269	.269	.1	19	1	1
69	44	155	.287	.287	.1	15	1	1
70	39	180	.043	.217	.1	0	5	1
71	14	87	.163	.163	.0	23	1	1
72	55	72	.774	.774	2.7	19	1	1
73	350	102	.572	.858	4.3	15	6	4
74	42	87	.490	.490	.5	19	1	1
75	92	77	.394	.592	.6	8	3	2
76	61	117	.524	.524	.6	10	1	1
77	145	165	.295	.884	6.8	15	1	0
						10	2	1
78	333	408	.818	.818	3.7	0	1	3
79	3826	743	.735	.857	3.8	11	1	0
						8	6	6
80	160	75	.703	.703	1.2	9	1	1
						8	2	2

Table VI Con't
(NEW CBA)

CENTER 4: HUNTINGTON

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
81	9	33	.280	.280	.1	27	1	1
82	29	56	.517	.517	.6	10	1	1
83	213	245	.866	.866	5.6	23	1	1
84	85	182	.466	.466	.4	19	1	1
85	255	93	.454	.907	8.1	15	6	3
86	152	78	.645	.967	28.2	8	3	2
87	234	326	.717	.717	1.8	15	1	1
88	7	38	.182	.182	.0	8	1	1
89	49	183	.270	.270	.1	23	1	1
90	158	195	.812	.812	3.5	19	1	1
91	293	90	.543	.815	2.7	15	6	4
92	149	111	.448	.672	1.1	8	3	2
93	35	62	.563	.563	.7	23	1	1
94	72	144	.500	.500	.5	19	1	1
95	296	75	.658	.987	73.2	15	6	4
96	7	162	.044	.044	.0	23	1	1
97	74	581	.032	.128	.0	15	4	1
98	21	105	.101	.203	.1	8	2	1
99	117	96	.612	.612	.7	10	2	2
100	191	230	.833	.833	4.2	12	1	1
101	427	366	.582	.582	.6	8	2	2
102	16	98	.166	.166	.0	19	1	1
103	126	204	.311	.621	1.0	0	2	2
104	17	62	.276	.276	.1	15	1	1

Table VI Con't
(NEW CBA)

CENTER 5: RIVERHEAD

	A	B	C	D	E	F	G	H
ST #	ARRIV RATE #/WK	SERVI RATE #/WK	PRSNT UTIL	OPT UTIL	AVE # IN QUEUE	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS
105	3	35	.101	.101	.0	27	1	1
106	140	170	.824	.824	3.9	10	1	1
107	142	318	.447	.447	.4	23	1	1
108	21	117	.181	.181	.0	19	1	1
109	387	113	.685	.856	4.2	19	2	1
						15	3	3
110	469	147	1.065	.799	2.4	6	3	4
111	235	249	.945	.945	16.3	15	1	1
112	116	101	1.155	.578	.6	6	1	2
113	116	204	.573	.573	.8	23	1	1
114	189	99	1.898	.949	17.1	19	1	1
						15	0	1
115	648	110	.981	.981	49.7	19	2	2
						15	4	4
116	1085	491	.552	.737	1.5	10	1	0
						6	2	2
						4	1	1
117	28	53	.526	.526	.6	21	1	1
118	174	207	.842	.842	4.5	19	1	1
119	523	117	.894	.894	6.4	19	1	1
						15	4	4
120	71	98	.717	.717	1.8	23	1	1
121	81	68	.296	.592	.6	15	4	2
122	157	93	.837	.837	3.9	10	1	1
						6	1	1
123	277	245	.377	.565	.5	10	3	2
124	211	228	.926	.926	11.6	15	1	1
125	856	638	.671	.671	1.1	11	1	1
						8	1	1
126	14	75	.189	.189	.0	19	1	1
127	21	177	.120	.120	.0	0	1	1
128	0	113	0.000	0.000	0.0	0	1	1
129	49	90	.552	.552	.7	10	1	1

Table VI Con't
(NEW CBA)

CENTER 6: MASTIC

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
130	85	117	.728	.728	2.0	27	1	1
131	373	420	.888	.888	7.1	10	1	1
132	40	141	.285	.285	.1	23	1	1
133	124	147	.848	.848	4.7	19	1	1
134	539	114	.939	.939	13.2	15	5	5
135	197	140	.701	.701	1.4	8	2	2
136	97	92	1.056	.528	.4	8	1	2
137	344	255	.675	.675	1.1	15	1	1
						8	1	1
138	28	279	.102	.102	.0	23	1	1
139	46	210	.055	.220	.1	15	4	1
140	7	360	.020	.020	.0	10	1	1
141	95	111	.432	.864	5.5	8	2	1
142	154	167	.917	.917	10.1	23	1	1
143	110	120	.459	.917	10.1	19	2	1
144	1432	189	.842	.947	15.0	19	1	1
						15	8	7
145	1151	296	1.296	.972	32.6	8	3	4
146	195	230	.425	.850	4.8	10	2	1
147	578	600	.964	.964	25.7	15	1	1
148	1196	630	.950	.950	17.5	8	2	2
149	18	30	.604	.604	.9	10	1	1

Table VI Con't
(NEW CBA)

CENTER 7: PATCHOGUE - DEFUNCT (STAFF TRANSFERRED TO OTHER CTRS.)

	A	B	C	D	E	F	G	H
*ST #	ARRIV RATE #/WK	SERVI RATE #/WK	PRSNT UTIL	OPT UTIL	AVE # IN QUEUE	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS**
150	0	102	0.000	0.000	0.0	27	1	1
151	0	386	0.000	0.000	0.0	10	1	1
152	0	104	0.000	0.000	0.0	23	1	1
153	0	86	0.000	0.000	0.0	19	2	0
						15	2	1
154	0	155	0.000	0.000	0.0	8	3	1
155	0	192	0.000	0.000	0.0	19	1	1
156	0	137	0.000	0.000	0.0	8	1	1
157	0	348	0.000	0.000	0.0	23	1	1
158	0	227	0.000	0.000	0.0	19	2	1
159	0	162	0.000	0.000	0.0	15	7	1
160	0	104	0.000	0.000	0.0	8	1	1
161	0	264	0.000	0.000	0.0	23	1	1
162	0	185	0.000	0.000	0.0	15	3	1
163	0	192	0.000	0.000	0.0	8	3	1
164	0	83	0.000	0.000	0.0	10	2	1
165	0	225	0.000	0.000	0.0	15	1	0
						11	1	1
166	0	273	0.000	0.000	0.0	8	1	1
167	0	29	0.000	0.000	0.0	10	1	1

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*The corresponding old stations' number and name of this defunct center are listed in Table II, p. 26A-5.

** Slack or pool of workers that can be used by management to assure a smooth transition from the old to new CBA system.

Table VI Con't
(NEW CBA)

CENTER 8: WYANDANCH

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
168	9	33	.280	.280	.1	27	1	1
169	40	56	0.000	.710	1.7	15	0	1
170	213	249	0.000	.855	5.1	19	0	1
171	121	185	0.000	.655	1.2	15	0	1
172	383	93	0.000	.817	2.6	15	0	4
						10	0	1
173	248	78	0.000	.787	2.1	8	0	4
174	319	326	0.000	.977	41.6	15	0	1
175	7	38	0.000	.182	.0	8	0	1
176	71	183	0.000	.386	.2	19	0	1
177	71	90	0.000	.789	2.9	15	0	1
178	518	92	0.000	.929	10.6	19	0	1
						15	0	5
179	277	111	0.000	.835	3.6	8	0	3
180	42	62	0.000	.676	1.4	19	0	1
181	126	144	0.000	.880	6.5	15	0	1
182	436	75	0.000	.970	29.2	19	0	1
						15	0	1
						10	0	4
183	21	165	0.000	.129	.0	19	0	1
184	149	165	0.000	.904	8.5	15	0	1
185	120	66	0.000	.914	9.3	8	0	2
186	171	102	1.681	.841	4.0	10	1	1
						8	0	1
187	358	230	0.000	.779	2.4	12	0	2
188	344	366	.940	.940	14.6	8	1	1
189	16	98	.166	.166	.0	17	1	1
190	160	204	.785	.785	2.9	15	1	0
						0	0	2
191	24	62	0.000	.389	.2	15	0	1

Table VI Con't
(NEW CBA)

CENTER 9: CHRONIC CARE*

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
192	46	102	0.000	.452	.4	27	0	1
193	156	111	0.000	.704	1.4	8	0	2
194	39	204	0.000	.191	.0	19	0	1
195	14	111	0.000	.128	.0	15	0	1
196	267	66	0.000	.811	2.5	15	0	3
						10	0	2
197	8	51	0.000	.160	.0	19	0	1
198	14	83	0.000	.169	.0	15	0	1
199	194	68	0.000	.942	14.4	15	0	3
200	648	159	0.000	.811	2.5	4	0	5
201	315	122	0.000	.855	4.4	15	0	2
						8	0	1
202	53	144	0.000	.370	.2	8	0	1
203	14	177	0.000	.080	.0	19	0	1
204	114	380	0.000	.302	.1	15	0	1
205	174	53	0.000	.807	2.5	15	0	3
						10	0	1
206	17	354	0.000	.050	.0	19	0	1
207	24	62	0.000	.389	.2	15	0	1
208	31	111	0.000	.288	.1	15	0	1
209	172	83	0.000	.685	1.0	8	0	3
210	129	45	0.000	.962	23.8	19	0	3
211	56	167	0.000	.338	.2	15	0	1
212	337	66	0.000	.852	3.6	15	0	4
						10	0	2
213	390	81	0.000	.964	24.6	8	0	5
217	606	140	0.000	.866	4.4	13	0	5
219	204	117	0.000	.875	5.7	8	0	2
220	21	48	0.000	.444	.4	11	0	1
221	1825	615	0.000	.989	91.3	8	0	3
222	92	129	0.000	.716	1.8	15	0	1

*See earlier footnote on page 29A-10, Table V.

analysis model was used to conduct a sensitivity analysis.

Under this restricted budget configuration, only 423 workers and a weekly payroll budget of $206,707 are needed. However, under this reduced weekly payroll configuration, the CBA system can handle an arrival rate (of cases) which is 16% -18% below the most recent (May 1990) demand for services. Again, notice that included in these figures are the pool of workers found in the Patchogue center. This budget restriction may defeat the intent behind the provision of Public Assistance Services. Specifically, a reduced level of services may prevent the CBA from realizing its collective goal of assisting the clients to achieve a position of economic self-reliance.

The ramification of these findings is that the CBA's caseload will have to be reduced proportionally. Such a reduction, however is infeasible, unless the eligibility criteria and/or the legal definition of poverty are modified by both the N.Y. State and the federal legislative branches.

The impact of this budgetary restriction upon the CBA operation is presented in detail below, in Table VII. Under this budgetary restriction, Station No. 1, for example, can handle an arrival rate of 65 matters per week, as denoted in Table VII, Column "A", whereas the current (May 1990) arrival rate to that station is 79 matters (items) per week, as was denoted earlier in Table VI. On the other hand, Station 18 can handle no more than 589 items per week, whereas its most current (May 1990) weekly arrival rate is 706 items as was denoted in Table V. Also notice that the solutions presented in Table VII call for staff reduction (by grade) in certain stations. For instance, Station 2 optimal solution requires no grade 10 worker, whereas, Case 2 solution (found in Table V) calls for one grade 10 worker to be assigned to this station (No. 2).

D. Ramification of the Findings

Due to the CBA's queueing behavior, Case 4 findings in particular, suggest that the CBA's caseload will have to be reduced proportionally. Such a reduction, as was noted above, is infeasible unless the eligibility criteria and/or the legal definition of poverty is modified by both N.Y. State and the federal government.

To overcome the problems associated with a reduced budget , one may argue that the SCDSS should consider exercising the option of reducing the quality of services provided [see Spottheim/Wilson, March 1990]. Alternatively, it has been argued by some parties that a staff reduction will merely prolong the amount of time clients will have to wait for

Table VII

CLIENT BENEFITS STUDY

Case IV, Solutions

[CASE09]
(NEW CBA)
NUMBER OF REQUIRED EMPLOYEES : 423
NUMBER OF PRESENT EMPLOYEES : 446 (Fall of 1989)
TOTAL REQUIRED WEEKLYPAYROLL : $ 206707.00
TOTAL PRESENT WEEKLY PAYROLL : $ 217777.00
SYSTEM OPTIMIZATION INDEX : 1894.2874
(5 percent payroll budget reduction - 1989)

CENTER 1: BAYSHORE

ST #	A ARRIV RATE #/WK*	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
1	65	90	.365	.730	2.0	27	2	1
2	179	105	.571	.856	4.7	10	1	0
						8	2	2
3	188	144	.651	.651	1.0	23	2	2
4	353	120	1.473	.982	53.2	19	2	3
						15	0	1
5	412	62	.655	.935	11.8	19	1	0
						15	9	8
6	11	48	.246	.246	.1	23	1	1
7	32	68	.470	.470	.4	19	1	1
8	299	75	.266	.999	876.7	19	4	0
						15	11†	5
9	996	159	.779	.891	5.7	8	6	5
						4	2	2
10	485	222	.438	.730	1.4	19	1	0
						10	1	0
						8	3	3
11	388	105	1.852	.926	10.5	10	0	2
						8	2	2
12	61	149	.413	.413	.3	23	1	1
13	505	380	.664	.664	1.0	19	2	2
14	383	98	.553	.967	27.5	15	7	5
15	108	450	.242	.242	.1	23	1	1
16	198	200	.494	.988	81.6	19	2	2
17	462	120	.482	.964	25.0	19	1	0
						15	7	5
18	586	119	.821	.985	61.7	15	0	6
						8	6	0
19	162	111	.724	.724	1.6	23	2	2
20	188	165	.381	.571	.6	19	3	2
21	830	101	.632	.912	7.5	15	9	7
						13	4	2
22	286	81	.883	.883	5.7	8	4	4
23	79	140	.564	.564	.7	10	1	1
24	79	149	.532	.532	.6	23	1	1
25	300	188	.800	.800	2.8	19	2	2
26	883	140	.788	.900	6.5	19	1	1
						13	7	6
27	352	225	.781	.781	2.4	8	2	2
28	298	132	.566	.754	1.8	10	4	3
29	149	161	.463	.925	11.5	11	2	2
30	2657	524	.634	.845	3.3	8	8	6
31	133	129	.259	.518	.4	10	4	2

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*Attainable arrival rate

† See earlier footnote on page 27A-1, Table III.

Table VII Con't
(Case IV NEW CBA)

CENTER 2: CORAM

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
32	116	170	.679	.679	1.4	27	1	1
33	422	393	1.075	.538	.4	10	0	1
						8	1	1
34	132	234	.565	.565	.7	23	1	1
35	97	147	.661	.661	1.3	19	1	1
36	976	152	.709	.912	7.8	19	3	3
						15	6	4
37	551	185	.741	.988	80.3	15	0	4
						10	1	0
						8	3	0
38	468	330	.710	.710	1.4	19	1	1
						8	1	1
39	111	191	.586	.586	.8	8	1	1
40	80	240	.336	.336	.2	23	1	1
41	82	135	.611	.611	1.0	19	1	1
42	692	192	.515	.901	7.2	15	7	4
43	427	96	.890	.890	6.0	8	5	5
44	113	300	.379	.379	.2	23	1	1
45	178	245	.726	.726	1.9	19	1	1
46	739	132	.801	.934	11.7	15	7	7
47	57	102	.560	.560	.7	23	1	1
48	209	249	.841	.841	4.5	19	1	1
49	415	68	.753	.861	3.8	15	8	7
50	171	81	.699	.699	1.1	8	3	3
51	107	345	.156	.313	.1	10	2	1
52	166	261	.637	.637	1.1	15	1	1
53	756	668	.565	.565	.5	8	2	2
54	74	98	.763	.763	2.5	10	1	1

Table VII Con't
(Case IV NEW CBA)

CENTER 3: SMITHTOWN

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
55	19	32	.606	.606	.9	27	1	1
56	23	147	.160	.160	.0	10	1	1
57	57	260	.220	.220	.1	23	1	1
58	151	225	.673	.673	1.4	19	1	1
59	280	77	.599	.898	6.9	15	6	4
60	29	77	.378	.378	.2	19	1	1
61	174	225	.774	.774	2.6	8	1	1
62	50	66	.379	.759	2.4	15	1	1
						8	1	0
63	89	81	.545	.545	.5	23	2	2
64	147	140	.522	.522	.4	19	2	2
65	701	92	.686	.943	13.5	19	1	0
						15	10	9
66	925	345	.670	.894	6.8	8	4	3
67	58	41	1.403	.702	1.4	8	1	2
68	26	120	.223	.223	.1	19	1	1
69	37	155	.238	.238	.1	15	1	1
70	32	180	.036	.180	.0	0	5	1
71	11	87	.135	.135	.0	23	1	1
72	46	72	.643	.643	1.2	19	1	1
73	290	102	.475	.949	17.0	15	6	4
74	35	87	.406	.406	.3	19	1	1
75	76	77	.327	.982	54.1	10	0	1
						8	3	1
76	51	117	.435	.435	.3	10	1	1
77	121	165	.245	.734	2.0	15	1	0
						10	2	1
78	276	408	.679	.679	1.4	0	1	3
79	3176	743	.610	.854	3.9	11	1	0
						8	6	5
80	132	75	.584	.875	5.7	9	1	1
						8	2	1

Table VII Con't
(Case IV NEW CBA)

CENTER 4: HUNTINGTON

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
81	7	33	.232	.232	.1	27	1	1
82	24	56	.429	.429	.3	10	1	1
83	176	245	.719	.719	1.8	23	1	1
84	70	182	.386	.386	.2	19	1	1
85	212	93	.377	.753	1.7	15	6	3
86	126	78	.535	.803	2.9	8	3	2
87	194	326	.595	.595	.9	15	1	1
88	5	38	.151	.151	.0	8	1	1
89	41	183	.224	.224	.1	23	1	1
90	131	195	.674	.674	1.4	19	1	1
91	243	90	.451	.901	7.5	15	6	3
92	123	111	.372	.557	.5	8	3	2
93	29	62	.468	.468	.4	23	1	1
94	59	144	.415	.415	.3	19	1	1
95	245	75	.546	.819	2.9	15	6	4
96	5	162	.036	.036	.0	23	1	1
97	61	581	.027	.106	.0	15	4	1
98	17	105	.084	.168	.0	8	2	1
99	97	96	.508	.508	.4	10	2	2
100	159	230	.691	.691	1.5	12	1	1
101	354	366	.483	.966	27.5	8	2	1
102	13	98	.138	.138	.0	19	1	1
103	105	204	.258	.516	.5	0	2	2
104	14	62	.229	.229	.1	15	1	1

Table VII Con't
(Case IV NEW CBA)

CENTER 5: RIVERHEAD

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
105	2	35	.084	.084	.0	27	1	1
106	116	170	.684	.684	1.5	10	1	1
107	117	318	.371	.371	.2	23	1	1
108	17	117	.150	.150	.0	19	1	1
109	321	113	.568	.947	16.3	19	2	1
						15	3	3
110	389	147	.884	.884	6.0	6	3	3
111	195	249	.785	.785	2.9	15	1	1
112	96	101	.959	.959	22.3	6	1	2
113	96	204	.475	.475	.4	23	1	1
114	157	99	1.575	.788	2.6	19	1	1
						15	0	1
115	538	110	.814	.977	40.7	19	2	2
						15	4	4
116	900	491	.459	.917	9.7	15	0	1
						10	1	0
						6	2	1
						4	1	1
117	23	53	.437	.437	.3	21	1	1
118	144	207	.699	.699	1.6	19	1	1
119	434	117	.742	.928	10.9	19	1	1
						15	4	4
120	58	98	.595	.595	.9	23	1	1
121	67	68	.246	.982	54.1	15	4	2
122	130	93	.695	.695	1.3	10	1	1
						6	1	1
123	230	245	.313	.938	14.2	15	0	2
						10	3	0
124	175	228	.768	.768	2.6	15	1	1
125	711	638	.557	.557	.5	11	1	1
						8	1	1
126	11	75	.157	.157	.0	19	1	1
127	17	177	.100	.100	.0	0	1	1
128	0	113	0.000	0.000	0.0	0	1	1
129	41	90	.458	.458	.4	10	1	1

Table VII Con't
(Case IV NEW CBA)

CENTER 6: MASTIC

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
130	70	117	.604	.604	.9	27	1	1
131	309	420	.737	.737	2.1	10	1	1
132	33	141	.237	.237	.1	23	1	1
133	103	147	.704	.704	1.7	19	1	1
134	447	114	.780	.974	36.0	15	5	5
135	164	140	.582	.582	.6	8	2	2
136	80	92	.877	.877	6.2	8	1	1
137	285	255	.560	.560	.5	15	1	1
						8	1	1
138	23	279	.084	.084	.0	23	1	1
139	38	210	.046	.182	.0	15	4	1
140	5	360	.016	.016	.0	10	1	1
141	79	111	.358	.717	1.8	8	2	1
142	127	167	.761	.761	2.4	23	1	1
143	91	120	.381	.761	2.4	19	2	1
144	1188	189	.699	.898	6.3	19	1	1
						15	8	6
145	955	296	1.076	.807	2.5	10	0	1
						8	3	3
146	162	230	.353	.706	1.7	10	2	1
147	479	600	.800	.800	3.2	15	1	1
148	993	630	.788	.788	2.6	8	2	2
149	15	30	.501	.501	.5	10	1	1

Table VII Con't
(NEW CBA)

CENTER 7: PATCHOGUE - DEFUNCT (STAFF TRANSFERRED TO OTHER CTRS.)

	A	B	C	D	E	F	G	H
*ST #	ARRIV RATE #/WK	SERVI RATE #/WK	PRSNT UTIL	OPT UTIL	AVE # IN QUEUE	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS**
150	0	102	0.000	0.000	0.0	27	1	1
151	0	386	0.000	0.000	0.0	10	1	1
152	0	104	0.000	0.000	0.0	23	1	1
153	0	86	0.000	0.000	0.0	19	2	0
						15	2	1
154	0	155	0.000	0.000	0.0	8	3	1
155	0	192	0.000	0.000	0.0	19	1	1
156	0	137	0.000	0.000	0.0	8	1	1
157	0	348	0.000	0.000	0.0	23	1	1
158	0	227	0.000	0.000	0.0	19	2	1
159	0	162	0.000	0.000	0.0	15	7	1
160	0	104	0.000	0.000	0.0	8	1	1
161	0	264	0.000	0.000	0.0	23	1	1
162	0	185	0.000	0.000	0.0	15	3	1
163	0	192	0.000	0.000	0.0	8	3	1
164	0	83	0.000	0.000	0.0	10	2	1
165	0	225	0.000	0.000	0.0	15	1	0
						11	1	1
166	0	273	0.000	0.000	0.0	8	1	1
167	0	29	0.000	0.000	0.0	10	1	1

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*The corresponding old stations' number and name of this defunct center are listed in Table II, p. 26A-5.

** Slack or pool of workers that can be used by management to assure a smooth transition from the old to new CBA system.

Table VII Con't
(Case IV NEW CBA)

CENTER 8: WYANDANCH

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
168	7	33	.232	.232	.1	27	1	1
169	33	56	0.000	.589	.8	15	0	1
170	176	249	0.000	.710	1.7	19	0	1
171	101	185	0.000	.543	.6	15	0	1
172	318	93	0.000	.847	3.8	15	0	3
						10	0	1
173	206	78	0.000	.871	5.2	8	0	3
174	265	326	0.000	.811	3.5	15	0	1
175	5	38	0.000	.151	.0	8	0	1
176	58	183	0.000	.320	.2	19	0	1
177	58	90	0.000	.655	1.2	15	0	1
178	430	92	0.000	.925	10.1	15	0	4
						10	0	1
179	230	111	0.000	.693	1.1	8	0	3
180	35	62	0.000	.561	.7	19	0	1
181	105	144	0.000	.730	2.0	15	0	1
182	362	75	0.000	.966	25.7	19	0	1
						15	0	5
183	17	165	0.000	.107	.0	19	0	1
184	123	165	0.000	.750	2.3	19	0	1
185	100	66	0.000	.759	2.1	10	0	1
						8	0	1
186	142	102	1.395	.698	1.3	10	1	1
						8	0	1
187	297	230	0.000	.647	.9	12	0	2
188	286	366	.780	.780	2.8	8	1	1
189	13	98	.138	.138	.0	17	1	1
190	132	204	.651	.651	1.2	15	1	0
						0	0	2
191	20	62	0.000	.323	.2	15	0	1

Table VII Con't
(Case IV NEW CBA)

CENTER 9: CHRONIC CARE*

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WK	C PRSNT UTIL	D OPT UTIL	E AVE # IN QUEUE	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS
192	38	102	0.000	.376	.2	27	0	1
193	129	111	0.000	.584	.6	8	0	2
194	32	204	0.000	.159	.0	19	0	1
195	11	111	0.000	.106	.0	15	0	1
196	222	66	0.000	.842	3.6	15	0	3
						10	0	1
197	6	51	0.000	.133	.0	19	0	1
198	11	83	0.000	.140	.0	15	0	1
199	161	68	0.000	.781	2.2	15	0	3
200	538	159	0.000	.841	3.6	8	0	4
201	261	122	0.000	.710	1.2	15	0	3
202	44	144	0.000	.307	.1	8	0	1
203	11	177	0.000	.067	.0	19	0	1
204	95	380	0.000	.250	.1	15	0	1
205	144	53	0.000	.893	6.7	15	0	2
						10	0	1
206	14	354	0.000	.042	.0	19	0	1
207	20	62	0.000	.323	.2	15	0	1
208	26	111	0.000	.239	.1	15	0	1
209	143	83	0.000	.852	4.5	8	0	2
210	107	45	0.000	.799	2.6	19	0	3
211	47	167	0.000	.281	.1	15	0	1
212	279	66	0.000	.848	3.6	15	0	4
						10	0	1
213	324	81	0.000	.800	2.2	10	0	2
						8	0	3
217	503	140	0.000	.898	6.9	13	0	4
219	170	117	0.000	.727	1.6	8	0	2
220	17	48	0.000	.368	.2	11	0	1
221	1515	615	0.000	.821	3.1	10	0	1
						8	0	2
222	76	129	0.000	.594	.9	8	0	1

*See earlier footnote on page 29A-10, Table V.

services. These options, however, are not feasible due to the system's queueing behavior and the client's perceptions regarding its operation.

As an Open Jacksonian Network, the CBA exhibits certain queueing behavior. As the station utilization index climbs above 0.92 the mean waiting time at a single server station, in particular, begins to grow exponentially. Not only does the mean waiting time grow dramatically but also the variability exhibited in the waiting time experienced by a matter at that station. This becomes especially pronounced when the utilization index exceeds 0.96, and an unstable queueing behavior occurs in a single worker station in particular. This instability is due to dramatic buildups of queued cases that take a long time to dissipate. This is a system behavior that clients will find intolerable.

While the disposition by this division of cases is carried out with less effort than the disposition of the Community Service's (CSA) cases, the CBA's clients need some special attention due to their social and economic isolation. A recent survey of clients receiving public assistance services revealed wide-spread client dissatisfaction with:

- The length of time they must wait before receiving their approved services;
- The number of meetings with workers;
- The number of telephone conversations with workers;
- The promptness with which the workers returned their phone calls; and
- The length of time they must wait in the office for scheduled appointments [Spottheim, April 1990].

These clients' perceptions reflect their concerns about their social and economic isolation. Therefore, a reduction in the quality of services and worker/client communication, in particular, may defeat the Public Assistance Services intent of assisting the clients to realize a state of economic self reliance.

Also, one may argue that to mitigate the budgetary problems, management should alleviate the staffing slack found in stations whose optimal staff utilization index is below 0.30, and the "labor pool" of 18 workers found in the (defunct) Patchogue Center, in particular. This argument, however, must be substantiated, because the work flow patterns between stations were captured during the Summer/Fall of 1989. Thus, the low optimal utilization index found in numerous stations may portray the system operation during the vacation seasons of 1989. Also, since the new CBA was not in operation at the time of this analysis, a validation procedure must be carried out before any action to alleviate the system's slack is initiated.

Should this validation procedure indicate that much more than 18 workers must be reassigned to busy stations, then SCDSS may have to consider alternative staffing policies, to mitigate the unabated budget crisis and the concurrent rise in the Public Assistance caseload. Finally, should this procedure indicate otherwise, then management may have to release surplus workers found in the said labor pool, which was identified earlier (by station & grade) in Tables V-VII.

V. MISCELLANEOUS ANALYSES

In addition to the resource allocation analyses discussed earlier, descriptive statistical methods were used for the purpose of providing management with information concerning the:

- Arrival rate of case records to the CBA's centers;
- Inter-station case records transactions;
- Case records processing cost; and
- Error rate analysis.

A. The Arrival Rate of Case Records

The weekly arrival rate to the system as was noted earlier, reflects the client's demand of service related actions to be processed by the CBA's centers. In contrast, the weekly arrival rate to a station is the sum of case records arriving to that station from the "rest of the world" or from another station within the center for further processing. Since several stations are involved (sequentially) in processing a given case record, the arrival rate to a station is likely to be higher than the arrival rate to a center.

The results of the case record arrival rate analysis are presented below in Table VIII. These results are tabulated in terms of hourly arrival rate of cases identified by their respective program's code to each of the "old" CBA's centers.

For instance, the hourly arrival rate of ADC's cases to the Islip, Coram and Smithtown Centers is 29.38, 13.67, and 18.96 respectively. In contrast, the hourly arrival rate of administrative matters (ADMN) to these centers is 15.33, 41.80, and 17.27 respectively. On the other hand, the Islip

Table VIII
THE OLD CBA SYSTEM
Hourly Arrival Rate of Case Records to the System*
(by Center and Program)

Program's Code & Number

Center's Name & Number

CENTER NAME	CENTER NO.	PRO.1	PRO.2	PRO.3	PRO.4	PRO.5	PRO.6	PRO.7
		ADC	HR	EA	MA	HEAP	FS	ADMN
ISLIP	1	29.38	11.17	1.50	17.88	.19	4.85	15.33
CORAM	2	13.67	12.67	1.20	16.40	.15	3.87	41.80
SMITHTOWN	3	18.96	7.01	.94	13.48	.12	3.28	17.27
HUNTINGTON	4	19.60	10.00	1.33	7.73	.13	2.13	27.80
RIVERHEAD	5	17.14	5.99	.80	18.07	.10	3.23	25.33
MASTIC	6	8.27	1.47	.79	2.00	.10	1.60	17.13
AMITYVILLE	7	22.93	5.60	1.07	10.67	.09	3.33	2.73
PATCHOGUE	8	13.73	4.13	.13	5.33	.07	2.13	26.87
WYANDANCH	9	4.27	2.93	2.67	0.00	0.00	0.00	2.80

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* Observed in the Fall of 1989. Recent data (May 1990) seem to indicate a 13% increase in the arrival rate of case records to the system.

Center's arrival rate of HR, MA and FS cases is 11.17, 1.50, 17.88 and 4.85. The center's weekly arrival rates of case records can be estimated through the multiplication of their respective hourly arrival rates by 35.5

It should be noted that the variation of arrival rates across centers is partially reflected in the center's staffing needs. Another factor influencing the centers staffing needs, as well as its processing cost, is the intensity of case record transactions.

B. Case Records: Transactions and Processing Costs

The case record transactions index, or multiplier, denotes the average number of transfers between the stations involved that a case record (entering a given center) ought to go through for processing purposes [Spottheim 1975]. Embedded in this index are repeated "visits" of a case record to a station. The multipliers for the old CBA's system are presented by program and center in Table IX-A. An examination of this table (IX-A) will reveal that the ADC, MA, and FS cases' multipliers of the Islip Center, for example, are 3.64, 7.26, and 3.09 respectively. On the other hand, the Islip, Coram and Smithtown Center's multipliers with respect to the ADC's cases are 3.64, 4.59 and 4.83 respectively. Notice that the MA cases' multipliers of the Islip, Smithtown and Riverhead Centers have a numerical value which is greater than seven, whereas, the HEAP's multiplier of the Huntington Center indicates that the average number of transfers for a HEAP case is 14.

Recall that the transaction index has a bearing upon the case record's processing cost. Hence, the higher the multipliers' value, the more expensive it is to process the case record. The processing-cost information, concerning the old CBA's system is tabulated by program and center in Table IX-B. By comparing the cost information found in this Table (IX-B) against the multipliers found in Table IX-A, inferences about the relationships between the multiplier and the processing cost can be drawn. For example, the high processing cost ($36.21) of HEAP cases observed in the Huntington Center can be partially attributed to the high value of this program's multiplier (14.00) found in this center. In contrast, the low processing cost of administrative matters (ADMN) across all centers can be attributed to the low multiplier value of these matters.

C. The Error Rate Analysis

The error rate analysis was conducted in response to the center administrator's request. Subsequently, the data collection form was redesigned so as to allow us to collect

Table IX -A
THE OLD CBA SYSTEM
Expected Number of a Case Record's Transfers Between Stations by Program & Center

Old CBA's Center Name

Program's Code & No.		Islip 1	Coram 2	Smithtown 3	Huntington 4	Riverhead 5	Mastic 6	Amityville 7	Patchogue 8	Wyandanch 9
ADC	1	3.64	4.59	4.83	5.67	3.71	6.61	3.62	5.13	1.62
HR	2	3.94	4.83	5.60	6.63	5.48	6.45	4.62	6.19	2.68
EA	3	5.50	5.44	7.67	9.60	7.00	0.00	4.75	4.00	3.90
MA	4	7.26	4.59	7.60	5.34	7.14	6.93	3.64	5.60	0.00
HEAP	5	6.00	0.00	3.00	14.00	5.00	0.00	0.00	0.00	0.00
FS	6	3.09	5.34	6.18	5.81	3.93	6.25	3.60	5.31	0.00
ADMN.	7	1.55	1.03	1.09	1.00	1.00	1.00	1.00	1.03	1.00

Table IX- B
THE OLD CBA SYSTEM
Case Record-Processing Cost by Center & Program*

PROGRAM

Center	1	2	3	4	5	6	7
1	9.99	11.26	13.92	21.52	22.01	7.66	6.12
2	11.01	11.42	13.05	16.12	0.00	12.55	3.16
3	12.51	14.31	19.70	23.99	6.55	13.13	3.20
4	16.81	19.02	27.19	16.50	36.21	16.60	2.77
5	10.91	14.96	16.10	29.67	6.63	11.57	3.18
6	14.48	14.44	0.00	18.25	0.00	13.03	2.80
7	11.31	16.42	16.34	10.85	0.00	11.35	3.04
8	14.66	18.28	10.39	12.59	0.00	14.46	2.85
9	4.03	3.87	6.03	0.00	0.00	0.00	5.54

* Center and program's names can be found above in Table VIII

concurrently (in the Fall of 1989) a 100% sample of error rate and work flow data concerning the old CBA operation. The results of this analysis have been tabulated under the following headings:

- Program number;
- Matter's number;
- Error-Causing Station;
- Error Rate; and
- Number of Occurences.

The program's name, code and number were listed earlier on page 21, whereas the matters have been defined in Table I (p. 21A-1). On the other hand, the error-causing stations' name and number can be found in Table II (p. 26A-1).

The findings of this analysis are presented under the above mentioned headings in Table X. The error rates denoted in Table X are defined as the probability that the indicated error-causing stations are likely to enter erroneous program and matter-related information into the case records. Hence, an error rate of 1.00 indicates that the corresponding station has entered erroneous information into each case it processed, whereas an error rate of 0.1 implies that the station in question has entered erroneous information into 10% of the cases it processed.

For expository purposes let us examine Station No. 140 (i.e., Mastic Center's-Undercare Clerk) findings. This station's error rate is 0.9762. That is to say that of the 42 cases processed by this station, 41 cases were found to have erroneous information regarding matter No. 15 (Undercare-Case Record Processing) and Program No. 1 (ADC) as indicated in Table X, Col. 5 (# of occurences). Also, notice that most of the detected errors are associated with:

- Program 1 (ADC) - matters 5, 15, 16; and
- Program 4 (MA) - matters 5, 10, 15.

Finally, since the designated detecting stations returned the erroneous cases to the error-causing stations for correction, the staffing allocation results, presented earlier, do take into account the time spent by stations involved in detecting and correcting the errors.

Table X
THE OLD CBA SYSTEM
Error Rate Analysis*
(by Station, Matters & Program)

PROGRAM No.	MATTER No.	ERROR CAUSING STATION	ERROR RATE	# OCCURENCES
1	5	3	.1429	1.0
1	5	9	1.0000	5.0
1	5	31	.1538	2.0
1	5	81	.3824	13.0
1	5	150	1.0000	1.0
1	5	168	.5000	1.0
1	15	18	.7846	51.0
1	15	60	.1250	1.0
1	15	114	.2500	2.0
1	15	140	.9762	41.0
1	15	181	.2857	2.0
1	16	36	.5000	2.0
1	16	59	.3333	2.0
1	16	113	.0769	2.0
1	16	119	.1429	1.0
1	16	138	.1429	1.0
1	16	173	.1111	1.0
1	36	175	.1379	4.0
2	5	9	.8889	8.0
2	5	31	.1111	3.0
2	6	30	.1429	1.0
2	10	31	.3333	1.0
2	15	18	.6842	13.0
2	15	129	.6667	2.0
3	5	81	.5385	7.0
4	5	21	.1429	1.0
4	5	22	.1111	1.0
4	5	42	.5000	2.0
4	5	73	.7200	18.0
4	5	93	.0476	1.0
4	5	177	.3333	1.0
4	10	92	.5000	1.0
4	10	93	.1875	3.0
4	15	92	.7500	6.0
4	15	93	.4667	7.0
4	15	134	.1429	1.0
4	15	177	1.0000	1.0
6	5	31	.0833	1.0
6	5	48	.7143	5.0
6	15	18	.5000	4.0
6	15	60	.5000	1.0

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* Matter, station and program names can be found in Tables I, II and p. 21 respectively.

Chapter Five
THE COMMUNITY SERVICES ANALYSIS

The Community Services Administration (CSA) administers a host of mandated social service programs. As the local delivery system, this Division offers direct services and arranges for the provision of services by a third party. The avowed intent of these services is to assist families, children and individuals who face distressful situations or personal handicaps to attain and sustain a socially secured environment and self-reliancy [Adopted from Wedemeyer 1970]. This intent and the corresponding goals have affected the operational structure this organization which is composed of Bureaus such as: a) Child Protective Services, b) Adult Services, c) Central Office and d) Family & Child Services.

I. THE CSA'S GOALS, STRUCTURE AND PRODUCTS

While the CSA is characterized by its enduring operational structure and recurrent work flow patterns, it was postulated earlier in this report, that this Division's missions and goals influenced its current operational structure and administrative processes. Specifically, the CSA's Bureaus along with their corresponding stations and the work flow patterns between these stations have been created by management, to assure an orderly determination of clients' eligibility and the provision of direct or indirect services to the eligible.

A. The CSA's Goals

As the social service delivery arm of the SCDSS, the CSA's mission is to administer a variety of programs whose targeted populations are: a) needy adults, b) children at risk, c) children in need of placement, and d) intact and single-parent families and which are in need of services. The goals of this Division, according to management, are to:

- Investigate reports of abuse, neglect or maltreatment of vulnerable adults and children;
- Petition the court for guardianship and to serve as the conservator or the guardian of theses adults and children, as well as providing them with remedial services;
- Provide residential placement service to mentally or physically handicapped adults;
- Provide a variety of homemaker services to the frail, physically disabled and elderly adults in particular and to the medicaid program's clients

generally;

- Render home management and health related services to mentally and physically handicapped adults;
- Help eligible individuals and families to find housing;
- Strengthen the bond between related individuals to enhance their options of living together;
- Provide foster care services to neglected, abused and other children in need of supervision;
- Secure an adoptive home for children in need of such a service;
- Provide day care services to eligible parents, to allow families to become self-supporting;
- Provide preventive services to eligible intact families and single parents for the purpose of strengthening the family unit and mitigating the risk of placing these clients' children in foster homes; and
- Provide counseling and referral services to teenage clients.

These goals are realized by a set of services and administratively related actions taken by the CBA, on behalf of the clients, for the purpose of changing their social, economic or health status.

B. The CSA's Operational Structure

Recall that the management science approach used in this analysis presupposes that the CSA's Bureaus can be viewed as a "queueing network" of stations, which are linked together by a recurrent flow of items (matters) that must be processed, sequentially. Since the conventional organizational structure of this Division did not identify such stations, it was necessary to disaggregate the Bureaus into their respective sets of work stations. The disaggregated CSA stations are listed in Table XI. An examination of this table will reveal that it also contains information regarding the average labor cost per minute for each of the 153 stations.

C. The CSA's Products

While the actions mentioned above are the means by which this

Table XI
The CSA's Bureaus & Corresponding Stations

I. BUREAU OF CHILD PROTECTIVE SERVICES

Station Code and Name		Labor Cost Per Minute* (Estimated)
1	Director	0.51
2	Secretary to the Director	0.21
3	Assistant Director	0.40
4	Community Organization Specialist	0.43
5	Supervisor Intake	0.40
6	Clerical/Secretarial/Intake	0.21
7	Community Service Workers/Intake	0.22
8	Case Work Intake	0.35
9	Supervisor of Response	0.36
10	Secretary to Supervisor - Response	0.21
11	Case Workers/Response	0.35
12	Institution Case Worker	0.36
13	Supervisor - Field	0.39
14	Secretary - Field	0.22
15	Case Workers - Field	0.32
16	Court Worker - Field	0.36
17	Community Service Worker	0.22
18	Supervisor of Service Delivery	0.39
19	Senior Caseworker (Court)	0.36
20	Senior Caseworker	0.36
21	Case Workers	0.33
22	Community Service Worker	0.22
23	Clerk/Typist/Senior Sten. Svc. Delivery	0.21
24	Emergency Services Supervisor	0.40
25	Case Workers Emergency Services	0.35
26	Clerks Emergency Services	0.21
27	Soc. Welfare Examiners Emergency Services	0.30

II. BUREAU OF ADULT SERVICES

Station Code and Name		Labor Cost Per Minute
28	Director	0.51
29	Secretary to the Director	0.23
30	Assist. Director Response Ref.	0.45
31	Assist. Director Adult Home	0.45
32	Secretary to Assist. Director	0.23
33	Supervisor Intake	0.40
34	Intake Workers	0.35
35	Intake Secretary	0.21
36	Brookhaven Service Team Sup.	0.40
37	Secretary BST	0.23
38	Case Workers BST	0.34
39	Community Service BST	0.17
40	Islip/Smithtown Service Sup.	0.40
41	Secretary IST	0.23

Table XI Con't

42	Case Workers	IST	0.33
43	Community Services	IST	0.23
44	Babylon & Huntington Team Supervisor		0.40
45	Secretary	BHST	N/A
46	Case Workers	BHST	0.35
47	Community Services	BHST.	0.23
48	Riverhead Service Team Supervisor		0.40
49	Secretary	RST	0.23
50	Case Workers	RST	0.34
51	Community Service	RST	0.23
52	Adult Home Unit Supervisor		0.40
53	Adult Home Unit Secretary		0.23
54	Adult Home Unit Case Workers		0.34
55	Conservatorship/Court Liaison Supervisor		0.40
56	Conservatorship/Court Liaison Secretary		0.21
57	Conservatorship/Case Worker		0.36
58	Conservatorship/Community Service Worker		0.23

III. BUREAU OF CENTRAL OFFICES

Station Code and Name		Labor Cost Per Minute
59	Administrator	0.63
60	Secretary	0.23
61	Senior Case Workers	0.36
62	Supervisor of Contracts	0.36
63	Secretary of Contracts	0.23
64	Contract Workers	0.38
65	Mgmt. Systems Supervisor	0.40
66	Secretary	0.21
67	Case Worker	0.33
68	Supervisor Resource Development	0.40
69	Secretary	0.21
70	Case Workers	0.33
71	Community Service Workers	0.22
72	Supervisor Homemakers	0.40
73	Mgmt. Systems/Clerical	0.22
74	Secretary Homemakers	0.23
75	Case Workers	0.36
76	Community Service Workers	0.23
77	Homemakers	0.20
78	Word Proc. Supervisor	0.27
79	Clerk Typists	0.21
80	Assistant to the Administrator	0.51
81	Community Organization Spec.	0.43
82	Neighborhood Aid	0.26
83	Domestic Violence Coordinator	0.41
84	Emergency Preparedness Officer	0.29
151	Assistant Administrator	0.56
152	Secretary to the Assistant Administrator	0.26
153	Assistant Secretary (M.S.)	0.21

Table XI Con't

IV. BUREAU OF FAMILY/CHILD SERVICES

Station Code and Name			Labor Cost Per Minute
85	Director		0.56
86	Secretary		0.21
87	Assistant Director I		0.45
88	Secretary to Assistant Director I		0.23
89	Supervisor Preventive/Intake	Team 009 E	0.40
90	Secretary to Supervisor	Team 009 E	0.23
91	Senior Class Worker Preventive	Team 009 E	0.36
92	Case Workers Preventive	Team 009 E	0.33
93	Senior Case Worker Preventive	Team 009 E	0.36
94	Supervisor	Team 008 W	0.40
95	Secretary	Team 008 W	0.23
96	Senior Case Worker	Team 008 W	0.36
97	Case Workers	Team 008 W	0.33
98	Case Review Supervisor	Team 019	0.39
99	Secretary Case Review	Team 019	0.23
100	Adoption Superv. Court Prep.	Team 020	0.40
101	Adoption Secretary	Team 020	0.21
102	Adoption Senior Case Worker	Team 020	0.36
103	Adoption Case Workers	Team 020	0.33
104	Secretary Court Prep.	Team 020	0.23
105	Senior Case Worker Term. Parent Rights		0.36
106	Senior Case Worker Foster Care Review		0.36
107	Senior Case Worker Adoption Voluntaries		0.36
108	Teenage Services Act Supervisor		0.40
109	Teenage Services Act Secretary		0.33
110	Teenage Services Act Case Workers		0.31
111	DAS Senior Case Worker		0.36
112	Supervisor Day Care	Team 023	0.40
113	Secretary Day Care	Team 023	0.21
114	Senior Case Workers Day Care		0.36
115	Case Workers Day Care		0.33
116	Assistant Director II		0.45
117	Secretary to Assist. Director II		0.23
118	Supervisor/Foster	Team 010	0.40
119	Secretary/Foster	Team 010	0.21
120	Senior Case Worker	Team 010	0.36
121	Case Workers	Team 010	0.33
122	Supervisor	Team 011	0.40
123	Secretary	Team 011	0.21
124	Senior Case Worker	Team 011	0.36
125	Case Workers	Team 011	0.33
126	Supervisor	Team 012	0.40
127	Secretary	Team 012	0.21
128	Senior Case Worker	Team 012	0.36
129	Case Workers	Team 012	0.33
130	Supervisor	Team 013	0.40
131	Secretary	Team 013	0.23

Table XI Con't

132	Senior Case Worker	Team 013	0.36
133	Case Workers	Team 013	0.33
134	Alt. to Ins. Plcmt.	Team 013	0.33
135	Supervisor	Team 014	0.40
136	Secretary	Team 014	0.21
137	Senior Case Worker	Team 014	0.36
138	Case Workers	Team 014	0.33
139	Supv. Residential/Indep. Living	Team 015	0.40
140	Secr. Residential/Indep. Living	Team 015	0.23
141	Sr. Case Wkr. Residen./Indep. Lvng	Team 015	0.36
142	Sr. Case Wkr. Residen./Indep. Lvng	Team 015	0.36
143	Case Wkr. Residen./Ind. Living	Team 015	0.33
144	Ctr. Mgr./Non-Svs. 4E/MA	Team 019	0.47
145	Case Wkr./Adoption Subsidy	Team 020	0.33
146	Secretary	Team 019	0.21
147	Administrator II	Transportation Unit	0.43
148	Sr. Acct. Clerk	Transportation Unit	0.26
149	Clerk	Transportation Unit	0.21
150	Community Svs. Worker	Transportation Unit	0.22

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* Derived from the Fall of 1989 Data. To estimate the average weekly salary per worker, the figures found in this column must be multiplied by 2,130.

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system's stations realize the CSA's goals, such information was not readily available, inasmuch as the CSA's administrative data base was confined to information such as: a) caseload , b) number of clients seen and c) number of cases processed. Since the CSA system has been viewed as an open queueing network of stations, the available information was deemed to be inappropriate for this analysis.

Consequently, we have defined an exhaustive set of administrative actions taken by this system, in relation to their clients. These actions, as noted earlier, are also referred to as: a) common flow items, or b) service and management-related matters.

The work flow patterns of these matters enabled us to estimate the cumulative time devoted by stations involved, directly or indirectly, in the provision of services. Specifically, by "tracing" the flow of matters between stations, quantitatively, we were able to emulate situations in which "actions" related to service administration were initiated in one station and transferred to other stations for further processing, and subsequently returned to the originating station.

It should be noted however, that unlike the CBA's stations which specialize in the processing of a particular matter, the CSA's stations involved tend to process the same matter, sequentially.

These matters are listed in Table XII. A cursory examination of this table will reveal that it contains a list of 450 distinct service and administratively related matters. Also, the Bureaus "visited" by the matters are identified in this table by an asterisk (*).

II. AN OVERVIEW OF THE CSA ANALYSIS

Social and human service delivery agencies are known to have multi-objectives (or goals) rather than a single objective, such as minimizing the client's waiting time. In light of the county budget crisis, it was felt that the most appropriate objectives are the following:

- Assure that service-related matters which involve emergency situations, and/or clients waiting for service, will be processed immediately;
- Minimize the waiting time a matter must spend in a station before being processed; and
- Minimize the weekly payroll budget expenditure.

Table XII
The CSA's Matters
& Visited Bureaus

MATTER	TITLE	CHILD	ADULT	CNTRL	FAMILY
1	Initial 2221 Processing	*		*	
2	Contact with reporter	*			
3	24 Hour contact	*		*	
4	Field Visit Investigation (Ong	*			
5	Case Consultation with Supervi	*	*	*	*
6	Services to Courts	*		*	
7	Protective Custody Issues	*	*		
8	Placement (Foster Care Etc.)	*		*	*
9	Case Determination and consult	*		*	*
10	Opening Of Case (WMS,CCRS,COO)	*		*	*
11	Progress notes/dictation	*	*	*	*
13	Collateral Contact	*	*	*	*
14	Court related petitions	*		*	*
15	Court appearances and related	*		*	*
16	Fair hearing and related	*		*	*
17	Advocacy Services	*			
18	Comprehensive Case Review Conf	*		*	*
19	Foster Home Visits	*			
20	Arrange Services To Child	*		*	*
21	Arrange Services To Family	*	*	*	
22	Direct Services To Child & Fam	*			
23	Client Transportation	*	*	*	*
24	Inter-agency Consultation Case	*		*	*
25	Supervised Visitation	*	*	*	
26	State Reports 2200 Series	*		*	
27	Case Closing	*	*	*	*
28	Emergency Non-CPS Services	*	*		
30	Non-case specific reporting	*	*	*	*
31	Unit Management/Non-case	*	*	*	*
32	Bureau Management/Non-case	*	*	*	*
33	Interagency Meetings/Non-case	*	*	*	*
34	Community Education		*		*
35	Supervision/Case related	*	*		*
36	Training	*	*	*	*
37	Audit activities	*	*	*	*
38	Adult Service Application		*	*	
39	Client Benefit Application		*		
40	Community Service Application	*	*		*
41	Application For Other Services		*	*	
42	Information and Referral	*	*	*	*
43	Field Assessment/Investigation		*		*
44	Office Assessment/Investigatio	*	*		*
45	Service Plan		*		
47	Re-Determination		*		
48	Client Visit/Protective Servic		*	*	
49	Client Visit/ Home Management		*		
50	Client Visit/ Health		*		
53	Office Financial Management Se		*		
54	Office Case Management		*	*	

Table XII Con't
CSA's Matters & Visited Bureaus

MATTER	TITLE	CHILD	ADULT	CNTRL	FAMILY
57	Crisis Intervention		*		
58	Case Specific Conference		*		
59	Case Review	*	*	*	*
60	Client Phone Contact	*	*	*	*
70	Case Assignment and control	*	*	*	*
71	Collateral Contact (Resources)	*		*	*
72	Supervision Of Child				*
73	Supervision Of Foster Home	*		*	
74	Supervision of POS Agencies				*
76	Mandated Child/Parent Visit.				*
77	Mandated Natural Parent Visit				*
78	Case Plan Preparation	*		*	*
80	Maint. & Inq. Of Welfare Mgmt	*	*	*	*
81	Maint. & Inq. Of Welfare Mgmt	*		*	*
82	Entry Of Info To CCRS	*		*	*
83	Re-placements	*			*
87	Maintaining T & A Sheets	*	*	*	*
88	Special Placements				*
89	Adoption Activities & Foster C				*
90	Case Specific Advocacy Related	*		*	*
91	State Utilization Review Proce				*
92	Independent Living Assessment				*
93	AbsentParent Location/Support				*
95	Emergency Non-Foster Care Ser				*
105	Case initiation	*		*	*
106	Eligibility determination			*	*
107	Placement services			*	*
108	Recertification	*	*	*	*
109	Camp application initialization				*
110	Determination of camp placement				*
111	Preparation of camp voucher				*
114	WMS activity	*		*	*
123	Recruitment Potential Adoptive				*
124	Orientation Potential Adoptive				*
125	Application Processing			*	*
126	Home Studies			*	*
127	Matching Child/Potential Adopt			*	*
128	Supervision of Adoption			*	*
130	Subsidy of adoptive parents			*	*
131	State Registry			*	*
133	Guardianship process			*	*
134	Post Adoption Activities	*		*	*
144	Scheduling	*			*
145	Requesting Records and UCR	*			*
146	Prepare audit chk list/pre-mee	*		*	*
147	Pre-review conference				*
149	Post conference to log	*			*
150	Prepare Case Review Summary	*		*	*
151	Identification of children in				*
152	Set up case files				*
153	Preparation of invitational le				*

Table XII Con't
CSA's Matters & Visited Bureaus

MATTER	TITLE	CHILD	ADULT	CNTRL	FAMILY
154			*		
160		*			
161	Intake and referral			*	*
162	Telephone and personal intake				*
163	Intern process Prv,UM,DAS,Intr			*	*
165	Mandated case worker visitatio	*	*	*	*
168	Case plan preparation (UCR's)	*		*	*
171	Transfer to external units				*
172	Transfer within bureau	*		*	*
176	Adoption/Unmarried mothers act				*
177	Monitoring POS preventive serv			*	*
178	Sagamore treatment/discharge mts				*
180	Requistioning client transp and				*
182	Preventive excess rent eligibil.				*
191	Case identification				*
192	Case control				*
193	Referral activities				*
194	Transfer out(polit cases)				*
195	MOnitoring contacts/supervising				*
196	Client home visits				*
197	Client case plan preparation				*
198	Collateral Contact(advocacy)				*
200	Other case specific reports/ac				*
221	Recruitment/Foster			*	
222	Recruitment/ Day			*	
223	Certification/ Foster			*	*
224	Certification/ Day			*	*
226	Re-Certification: Foster Care			*	*
227	Re-certification: Day Care			*	
228	Request For Placement/ Foster	*		*	
229	Request for Placement/ Day			*	
230	Match & Connect/Foster only			*	
231	Training of Providers: Foster			*	
232	Evaluation of Interstate Care			*	
234	Fingerprinting (Homes only)			*	
235	State Central Registry Clearan			*	
236	Inquiry and Screening (Telepho			*	
237	Presentation to community Group			*	
238	Emergency Short Term Foster Care			*	
239	General Pymts.For Emer.Foster			*	
247	Contract: Institutional Foster		*	*	
248	Contract: Day Care Center			*	
249	Contract: Consultants			*	
251	Contract: Homemaker			*	
252	Contract: Child Abuse Preventive			*	
253	Contract: Teen-Age Services Acts			*	
254	Contract: Salary Enhancement			*	
255	Contract: Family Foster Care			*	*
256	Contract: Family Dy Care			*	
257	Contract: Food Support Services			*	
258	Contract: Other			*	
259	Preparation of Proposals			*	
260	RFP review			*	

Table XII Con't
CSA's Matters & Visited Bureaus

MATTER	TITLE	CHILD	ADULT	CNTRL	FAMILY
261	Regulations Monitoring and Rev			*	
262	Contract Monitoring/Compliance			*	*
263	Agency Voucher Review			*	
271	Abandonment: Prep. and Review				*
272	Adandonment: Court Appearances				*
273	Permanent Neglect: Prep. and R				*
274	Permanent Neglect: Court Apper				*
275	Mental Ill/Retardation: Prep.				*
276	Mental Ill/Retardation:Court App				*
277	Deseased Parent: prep. and rev				*
278	Deseased Parent: Court Appear				*
279	Extension of Plcmnt 1055:pre.rev				*
280	Extension of Plcmnt 1055: Cour	*	*		*
281	Foster Care Review: Prep and R				*
282	Foster Care Review: Court Appe				*
283	358A Petitions: Prep and Revie				*
284	358A Petitions: Court App.				*
285	Logging Court Orders	*	*	*	*
292	Family & Child. Services Burea		*	*	*
293	Child Protective Bureau	*		*	
294	Adult Protective Services Bure		*	*	
295	Contract Preparation			*	
297	3 Month Reviews				*
298	6 Month Reviews			*	
299	Adoption Interviews			*	
300	716 Comprehensive Case Reviews			*	
309	Initial Request Processing			*	*
310	Log Case into File			*	
339	Initialize Services			*	
340	Determination of Billing			*	
341	Medical Need & Payment Assess			*	
342	Case Conferences			*	
343	Case Evaluation	*		*	
354	Locate Service Provider			*	
356	Billing from POS provider			*	
367	Maintain Management System			*	
368	Operate Management System	*		*	*
369	Operate Payment Authorization		*	*	*
370	Technical Assistance			*	
371	Monitor system/Advise line sta	*	*	*	*
372	Monitor and Maintain Financial			*	
381	Eligibility determination			*	
383	Tranportation Arrangements			*	
384	Close Case			*	
398	Evaluation:Inrst/Intra/Surr Ct			*	
399	Fingerprinting			*	
401	Application Evaluation & Recom			*	
403	Emergency Foster Home Supervis			*	
404	Administration of Vehicles	*			*
405	Vehicle Maintenance				*
408	Processing Custody Papers				*
406	Division Management	*	*	*	*

Table XII Con't
CSA's Matters & Visited Bureaus

MATTER	TITLE	CHILD	ADULT	CNTRL	FAMILY
407	Operations Support	*		*	*
409	Supervision of Day Care Hm/cet				*
410	Distribution of Donated Commo			*	
411	Maintenance of Principal Prov				*
412	Validating/Creating Medical Cds				*
413	Eligibility Determination/Fed.				*
415	Creating Forms and Procedures				*
416	Community Relations	*		*	*
417	Publicity			*	
418	Media Contacts			*	
419	Events (Picnics, Recognition D			*	
420	Contract Evaluation and Review			*	
421	Program Evaluation and Review			*	
422	Conducting Surveys			*	
450	Worker phone contact	*	*	*	
451	Technical Assistance (outside	*		*	
452	Technical Assistance (inside d	*		*	
453	Surveillance(Security)	*		*	
454	Active Intervention(Security			*	

To assure that the first condition is reflected in the model's results, all emergency matters were assigned a high value numerical weight, whereas, matters associated with a waiting client were assigned a medium numerical weight. All remaining matters processed by the CSA's stations were assigned a low weight. On the other hand, the second condition was incorporated into the model as an "objective function" or "system optimization index," whereas the third condition was incorporated into the model as a second "objective function."

Thus, the CSA staffing allocation solutions were derived through a "stepwise" application of Marginal Analysis model. In applying this model, the CSA was viewed as an open queueing network, inasmuch as the bureaus have no control over the weekly arrival rate of matters to the system.

A. The Data Base

To obtain these solutions through the application of the said model, we have used a data base containing the following information:

- Work standards (or work efforts);
- Weekly arrival rate of matters to Bureaus and consequently to the station;
- Work flow patterns of matters between stations;
- Workers' performance flexibility (exchangeability) matrix;
- Estimated weekly payroll by station; and
- Current staffing by station.

B. The Scenarios

Recall that the research problems mentioned in Chapter I were addressed through the application of management science techniques for the purpose of finding optimal resource (payroll budget& staffing) allocation solutions under various operational scenarios. In light of the county's financial problems, these solutions were derived through the application of the "minimum cost" computational procedure. For expository purposes, however, the results presented in this Chapter are confined to three scenarios, hence:

Case 1 - provides "steady state" solutions for a situation in which management wishes to know how the Fall 1989 level of factors of production (e.g., weekly payroll budget and staff) should be distributed over the CSA's stations, thereby allowing this system to process a weekly arrival rate of services and administrative matters, observed during the Fall of 1989, in the most efficient manner.

Case 2 - provides steady state solutions for a situation in which management wishes to know the optimal distribution of staff members over the stations so as to allow this system to process efficiently, a 10% increase in the weekly arrival rate of matters.

Case 3 - provides steady state solutions for a situation in which management wishes to know the: a) amount of matters that can be processed (per week) under a restricted weekly payroll configuration which is five percent (5%) below the Fall 1989 weekly payroll budget, b) the corresponding amount of staff members needed to process the said matters, and c) the optimal distribution of workers across all stations of the CSA system.

We mean by "steady state solution" in the foregoing, a solution to a system whose defining parameters are stable and predictable in a statistical sense. We do not mean a system that has been rendered deterministic; rather, the variability has been modeled (accounted for) explicitly. Finally, the reader should note that solutions for the scenarios were derived through the application of the "minimum cost" procedure.

C. Modeling Methodology

Since the Marginal Analysis Model calls for the specification of a single objective function and numerous constraints (i.e., operational rules), the minimum cost solutions for scenarios 1 & 2 were derived through a stepwise application of this model. Specifically, these solutions were derived through the specification of the:

- Waiting time a matter must spend in a station as the first objective function; and

- Weekly payroll budget as the second objective function to be minimized.

Subsequently, the constraints or rules of operation were specified to:

- o Utilize to best advantage the existing workers' performance flexibility, thereby allowing us to transfer workers from a given bureau's station to any other station of the system;
- o Mitigate congestion problems found in supervisory and other stations;
- o Assure that the amount of time spent by a matter in the system is no greater than four weeks; and
- o Assure that service-related matters which involved emergency situations, and/or client waiting for services, are processed immediately.

These rules were incorporated into the model to assure that the system's productivity enhancement would be achieved without tampering with the: a) work standards, b) organizational structure and c) work flow patterns as indicated by actual observation of the system.

Therefore, we assumed that the processing capacity of a station can be expanded by increasing the number of workers at that station. On the other hand, workers affiliated with a station whose utilization index was found to be low, were transferred to congested stations, when possible, as indicated by the worker interchangeability matrix. The quantity of workers added to a congested station was determined by taking into account the number of workers necessary to minimize the waiting time a matter must spend at the station, as well as the number of additional workers that may be required to assure that matters needing actions at the station will clear the system in four weeks.

III. THE CSA'S STAFFING SOLUTIONS

The scenarios (or cases) mentioned above, represent a sample of administrative situations that have been analyzed through the application of the queueing and marginal analysis models, without altering the CSA's: a) observed work standards, b) operational structure and c) work flow patterns.

The application of these models enabled us to generate descriptive and prescriptive information concerning this system's performance. Specifically, these models allowed us to generate a uniform set of numerical information (by station) for each scenario; namely the:

- Station code
1. Weekly arrival rate (of matters) to station
2. Weekly service (or processing) rate per worker by station
3. Present utilization index
4. Optimal utilization index
5. Average waiting time a matter spends in a station before being processed (measured in weeks)
6. Worker's grade
7. Present staffing (by worker's grade)
8. Staffing after shift
9. Optimal staffing (by grade)

It should be noted that a zero value for any of these items indicates that they were not calculated, due to the lack of data concerning the station in question.

A. Case 1 - Results

Solutions for Case-1 are tabulated by bureaus, in Table XIII. A cursory examination of this table will reveal that it contains 9 columns of numerical information concerning the solution's items listed above. A further examination of this table will reveal that the system requires at least 424 workers and a weekly payroll budget of $246,503 in order to achieve a steady state operational environment. In contrast, this system would require over 465 workers under the conventional staff allocation practices. However, the Fall 1989 staffing level was 384 workers, and the corresponding weekly payroll budget was $221,698.

Also, notice that the optimal staffing is vastly different from the present staffing. For instance, the present staffing for station No. 15 is composed of 37 grade 19 workers, and 8 grade 17 workers, whereas the optimal staffing solution calls for 18 grade 19 and 8 grade 17 workers. Therefore 19 grade 19 workers were transferred to other stations. Also, notice that upon transferring these 19 workers (to other stations) the optimal utilization index was raised to .988 (from the present index of .571), without affecting the average waiting time a matter must spend before being processed. This average is .049 of a week or 105 minutes. A comparison of the current utilization against the optimal indices will reveal that the latter indices have a higher value than the former. Ideally, the optimal indices should have a range of 0.55 to 0.90.

Some stations, however have a current utilization index which is greater than one. For example, the current staffing of station No. 20 causes congestion in that station, due to a very high "present utilization" index (2.343). This high

Table XIII
Case I Results
for the
COMMUNITY SERVICES STUDY

(Lean Budget Configuration Scenario)

[CASE08]

NUMBER OF REQUIRED EMPLOYEES : 424
NUMBER OF PRESENT EMPLOYEES : 384 (1989)
TOTAL REQUIRED WEEKLYPAYROLL : $ 246503.00
TOTAL PRESENT WEEKLY PAYROLL : $ 221698.00 (fall of '89)

SYSTEM OPTIMIZATION INDEX : 10.5863

BUREAU: CHILD PROTECTIVE SERVICES

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
1	26	63	.410	.410	.011	29	1	1	1
2	104	57	0.000	.911	.086	8	0	2	2
3	172	115	.500	.750	.011	26	3	2	2
4	56	84	.671	.671	.024	25	1	1	1
5	47	100	.473	.473	.009	23	1	1	1
6	168	160	.350	.525	.002	8	3	2	2
7	177	118	.746	.746	.011	10	2	2	2
8	33	41	.398	.796	.094	19	2	1	1
9	23	59	.198	.396	.011	23	2	1	1
10	149	160	.466	.932	.085	8	2	1	1
11	466	58	.617	.891	.012	19	13	9	9
12	9	13	.690	.690	.163	21	1	1	1
13	333	114	.363	.969	.087	23	8	3	3
14	293	109	.671	.895	.023	10	4	3	3
15	1602	62	.571	.988	.049	19	37	18	18
						17	5	5	5
						17	3	3	3
16	153	52	.369	.983	.358	21	8	3	3
17	168	85	.327	.981	.305	10	6	2	2
18	160	64	.497	.828	.021	23	5	3	3
19	170	41	.815	.815	.015	21	5	5	5
20	409	58	2.343	.879	.011	21	3	8	8
21	904	43	.743	.991	.120	19	28	21	21
22	139	66	.423	.705	.009	10	5	3	3
23	222	108	.227	.682	.005	10	5	3	3
						8	4	0	0
24	26	38	.685	.685	.057	23	1	1	1
25	47	32	.210	.736	.037	21	6	1	1
						19	1	1	1
26	35	116	.152	.304	.004	8	2	1	1
27	205	134	.381	.763	.010	19	1	1	0
						15	3	3	2

Table XIIICon't
(Case I Results)

BUREAU: ADULT SERVICES

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
28	101	64	1.590	.795	.027	29	1	2	2
29	213	88	1.199	.799	.012	13	1	1	1
						8	1	2	2
30	68	29	2.325	.775	.030	26	1	3	3
31	71	45	1.571	.786	.036	26	1	2	2
32	82	68	1.215	.607	.009	10	1	2	2
33	243	188	1.290	.645	.004	23	1	2	2
34	778	64	1.209	.930	.012	21	6	6	6
						19	4	7	7
35	118	89	1.318	.659	.009	8	1	2	2
36	108	81	1.342	.671	.010	23	1	2	2
37	123	89	1.372	.686	.010	10	1	2	2
38	336	52	1.281	.915	.024	21	1	1	1
						19	4	6	6
39	68	62	1.098	.549	.007	4	1	2	2
40	7	29	.242	.242	.011	23	1	1	1
41	56	125	.452	.452	.007	10	1	1	1
42	231	37	1.547	.884	.022	19	4	7	7
43	85	35	2.398	.799	.030	10	1	3	3
44	182	123	1.474	.737	.010	23	1	2	2
46	288	51	1.394	.929	.037	21	1	1	1
						19	3	5	5
47	87	69	1.268	.634	.010	10	1	2	2
48	0	0	0.000	0.000	0.000	23	1	0	0
49	0	0	0.000	0.000	0.000	10	1	0	0
50	0	0	0.000	0.000	0.000	21	1	0	0
						19	3	0	0
51	2	90	.013	.026	.000	10	1	0	0
						4	1	1	1
52	56	27	2.058	.686	.018	23	1	3	3
53	54	73	.743	.743	.040	10	1	1	1
54	267	44	1.199	.999	5.202	21	1	1	1
						19	4	5	5
55	33	27	1.211	.605	.021	23	1	2	2
56	47	46	1.025	.513	.008	8	1	2	2
57	104	22	2.331	.932	.111	21	2	5	5
58	26	21	1.197	.598	.026	10	1	2	2

Table XIII Con't
(Case I Results)

BUREAU: CENTRAL OFFICES

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
59	4	48	.099	.099	.002	34	1	1	1
60	4	72	.066	.066	.001	10	1	1	1
61	61	25	.613	.817	.049	21	4	3	3
62	75	39	.957	.957	.273	23	2	2	2
63	35	41	.852	.852	.138	10	1	1	1
64	71	63	.559	.559	.007	23	1	1	1
						20	1	1	1
65	40	58	.691	.691	.038	23	1	1	1
66	16	30	.552	.552	.041	8	1	1	1
67	56	30	.465	.930	.210	19	4	2	2
68	54	74	.730	.730	.036	23	1	1	1
69	68	64	1.058	.529	.006	8	1	2	2
70	78	35	.440	.733	.019	19	5	3	3
71	66	40	.813	.813	.048	10	2	2	2
72	7	88	.080	.080	.001	23	1	1	1
73	224	44	.717	.836	.013	10	1	0	0
						8	6	6	6
74	49	77	.643	.643	.023	10	1	1	1
75	87	140	.624	.624	.012	21	1	1	1
76	42	44	.957	.957	.498	10	1	1	1
77	80	13	1.155	.962	.284	7	5	6	6
78	56	85	.668	.668	.024	14	1	1	1
79	246	60	.815	.815	.010	8	5	5	5
80	44	30	1.473	.737	.039	29	1	2	2
81	42	35	1.195	.598	.016	25	1	2	2
82	18	32	.592	.592	.045	13	1	1	1
83	75	103	.729	.729	.026	24	1	1	1
84	0	0	0.000	0.000	0.000	16	1	1	0
151	18	24	0.000	.788	.154	31	1	1	1
152	35	60	0.000	.586	.023	13	1	1	1
153	68	69	0.000	.987	1.106	8	1	1	1

Table XIII Con't
(Case I Results)

BUREAU: FAMILY/CHILD SERVICES

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
85	59	27	2.174	.725	.024	31	1	3	3
86	146	115	1.273	.636	.006	8	1	2	2
87	71	47	1.482	.741	.025	26	1	2	2
88	35	31	1.144	.572	.016	10	1	2	2
89	130	92	1.406	.703	.011	23	1	2	2
90	194	167	1.155	.578	.003	10	1	2	2
91	108	74	1.453	.727	.015	21	1	2	2
92	262	51	1.717	.858	.015	19	3	6	6
93	66	63	1.038	.519	.006	21	1	2	2
94	175	167	1.045	.522	.002	23	1	2	2
95	49	66	.746	.746	.044	10	1	2	1
96	21	28	.736	.736	.097	21	1	1	1
97	340	47	1.185	.889	.016	19	6	8	8
98	217	54	1.335	.801	.010	23	3	5	5
99	33	54	.604	.604	.028	10	1	1	1
100	80	71	1.124	.562	.006	23	1	2	2
101	16	30	.548	.548	.040	8	1	1	1
102	56	24	2.341	.780	.038	21	1	3	3
103	59	14	2.098	.839	.056	19	2	5	5
104	35	30	1.183	.592	.018	10	1	2	2
105	40	33	1.214	.607	.018	21	1	2	2
106	16	30	.552	.552	.041	21	1	1	1
107	30	38	.789	.789	.096	21	1	1	1
110	59	109	0.000	.539	.011	19	0	1	1
111	0	0	0.000	0.000	0.000	21	1	0	0
112	47	40	1.179	.590	.013	23	1	2	2
113	0	0	0.000	0.000	0.000	8	1	0	0
114	66	44	1.506	.753	.030	21	1	2	2
115	246	39	1.044	.895	.025	19	6	7	7
116	33	17	1.865	.932	.375	26	1	2	2
117	33	41	.789	.789	.089	10	1	1	1
118	75	84	.896	.896	.102	23	1	1	1
119	120	114	1.058	.529	.003	8	1	2	2
120	59	73	.803	.803	.055	21	1	1	1
121	203	40	1.688	.844	.016	19	3	6	6
122	14	41	.339	.339	.012	23	1	1	1
123	7	22	0.000	.322	.022	8	0	1	1
124	59	28	2.091	.697	.019	21	1	3	3

Table XIII Con't
(Case I Results)

	A	B	C	D	E	F	G	H	I
ST #	ARRIV RATE #/WK	SERVI RATE #/WRK/WK	PRSNT UTIL	OPT UTIL	AVE WAIT WK	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS	OPT STAFF
125	208	33	3.151	.900	.031	19	2	7	7
126	40	37	1.065	.533	.010	23	1	2	2
127	47	48	.986	.986	1.477	8	1	1	1
128	75	38	1.959	.980	.612	21	1	2	2
129	144	21	1.666	.952	.118	19	4	7	7
130	130	132	.979	.979	.346	23	1	1	1
131	73	154	.475	.475	.006	10	1	1	1
132	16	44	.375	.375	.014	21	1	1	1
133	132	41	1.068	.801	.018	19	3	4	4
134	73	65	1.125	.563	.007	19	1	2	2
135	56	79	.714	.714	.031	23	1	1	1
136	28	108	.262	.262	.003	8	1	1	1
137	54	50	1.068	.534	.008	21	1	2	2
138	262	48	1.350	.900	.025	19	4	6	6
139	73	56	1.295	.647	.013	23	1	2	2
140	92	68	1.343	.671	.012	10	1	2	2
141	23	15	1.578	.789	.110	21	1	2	2
142	66	53	1.249	.625	.012	21	1	2	2
143	563	36	1.910	.955	.030	19	8	16	16
144	14	90	.158	.158	.002	27	1	1	1
145	118	85	1.388	.694	.011	19	1	2	2
146	21	24	.868	.868	.267	8	1	1	1
147	52	30	1.709	.855	.089	25	1	2	2
148	30	30	.998	.998	17.465	13	1	1	1
149	40	29	1.354	.677	.028	8	1	2	2
150	196	12	3.780	.945	.067	10	4	16	16

present utilization index indicates that this station requires a staff of 8 persons, rather than the current 3 workers, to operate in a steady state operational environment, as was denoted above in Table XIII, Col. I & G, respectively.

Moreover, numerous Adult Services' stations are congested inasmuch as their present (Fall of 1989) utilization index is greater than one. For instance, the present utilization index of Station 28 is 1.590. By hiring an additional worker, this index was reduced to .795. In this instance, it was necessary to hire a new worker because the worker exchangeability matrix allows for no transfer of workers to this station. In addition, it was found that many of the Family/Child Services' stations are also congested. To reduce congestion, it was necessary to transfer and/or hire workers.

To mitigate problems of congestion, workers were transferred from stations where utilization indices were found to be low. In fact, several stations were found to have zero arrival rate, due to insufficient work flow data. For example, Adult Services' stations, Nos. 48-50, show a zero arrival rate of matters, due to lack of data. Hence, workers affiliated with these stations were transferred to other, congested stations. However, these stations can be restaffed by management "retransferring" workers from stations where staffing is greater than 10 persons. In other words, the system has enough "slack" to reassign workers.

Finally, notice that the optimal resource allocation model used in this analysis tends to equalize the work load of the stations' and matters' waiting time through the reassignment of the least staff to the busiest stations. The criteria of reassignment of staff members have been specified in the staff exchangeability matrix.

B. Case II Results

Recall that Case 2 provides a solution for a situation in which management faces a 10% increase in the demand for services. The solutions for the second scenario (Case II) were also derived through a stepwise application of the resource allocation model.

The results of this stepwise application of the model can be found in Table XIV. A cursory examination of this table will reveal that at least 452 workers and a weekly payroll budget of $262,131 are needed to achieve a steady state operational environment, under a lean payroll budget configuration.

Table XIV
Case II Results

for the

COMMUNITY SERVICES STUDY

(10% Arrival Rate Increase)

[CASE09]

NUMBER OF REQUIRED EMPLOYEES : 452
NUMBER OF PRESENT EMPLOYEES : 384
TOTAL REQUIRED WEEKLYPAYROLL : $ 262131.00
TOTAL PRESENT WEEKLY PAYROLL : $ 221698.00

SYSTEM OPTIMIZATION INDEX : 3.3735

BUREAU: CHILD PROTECTIVE SERVICES

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
1	28	63	.452	.452	.013	29	1	1	1
2	114	57	0.000	.668	.008	8	0	3	3
3	190	115	.550	.825	.018	26	3	2	2
4	62	84	.738	.738	.033	25	1	1	1
5	52	100	.520	.520	.011	23	1	1	1
6	184	160	.385	.577	.003	8	3	2	2
7	195	118	.820	.820	.017	10	2	2	2
8	36	41	.438	.876	.169	19	2	1	1
9	26	59	.218	.435	.013	23	2	1	1
10	164	160	.512	.512	.002	8	2	2	2
11	512	58	.679	.981	.092	19	13	9	9
12	10	13	.759	.759	.230	21	1	1	1
13	367	114	.400	.799	.006	23	8	4	4
14	322	109	.738	.984	.187	10	4	4	3
15	1762	62	.628	.975	.018	19	37	21	21
						17	5	5	5
						17	3	3	3
16	169	52	.405	.811	.016	21	8	4	4
17	184	85	.360	.720	.007	10	6	3	3
18	177	64	.547	.911	.048	23	5	3	3
19	187	41	.896	.896	.035	21	5	5	5
20	450	58	2.577	.966	.057	21	3	8	8
21	994	43	.818	.996	.223	19	28	23	23
22	153	66	.465	.775	.014	10	5	3	3
23	244	108	.250	.751	.007	10	5	3	3
						8	4	0	0
24	28	38	.753	.753	.080	23	1	1	1
25	52	32	.231	.810	.059	21	6	1	1
						19	1	1	1
26	39	116	.167	.335	.004	8	2	1	1
27	226	134	.420	.839	.018	19	1	1	0
						15	3	3	2

Table XIV Con't
(Case II Results)

BUREAU: ADULT SERVICES

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
28	111	64	1.749	.874	.051	29	1	2	2
29	234	88	1.319	.879	.024	13	1	1	1
						8	1	2	2
30	75	29	2.558	.853	.056	26	1	3	3
31	78	45	1.728	.864	.065	26	1	2	2
32	91	68	1.336	.668	.012	10	1	2	2
33	268	188	1.419	.710	.005	23	1	2	2
34	856	64	1.330	.950	.018	21	6	6	6
						19	4	8	8
35	130	89	1.450	.725	.012	8	1	2	2
36	119	81	1.476	.738	.015	23	1	2	2
37	135	89	1.510	.755	.015	10	1	2	2
38	369	52	1.409	.881	.013	21	1	1	1
						19	4	7	7
39	75	62	1.208	.604	.009	4	1	2	2
40	7	29	.266	.266	.012	23	1	1	1
41	62	125	.497	.497	.008	10	1	1	1
42	255	37	1.702	.973	.128	19	4	7	7
43	93	35	2.638	.879	.061	10	1	3	3
44	200	123	1.622	.811	.016	23	1	2	2
46	317	51	1.533	.876	.015	21	1	1	1
						19	3	6	6
47	96	69	1.395	.697	.014	10	1	2	2
48	0	0	0.000	0.000	0.000	23	1	0	0
49	0	0	0.000	0.000	0.000	10	1	0	0
50	0	0	0.000	0.000	0.000	21	1	0	0
						19	3	0	0
51	2	90	.014	.029	.000	10	1	0	0
						4	1	1	1
52	62	27	2.264	.755	.028	23	1	3	3
53	59	73	.818	.818	.061	10	1	1	1
54	294	44	1.319	.942	.046	21	1	1	1
						19	4	6	6
55	36	27	1.332	.666	.029	23	1	2	2
56	52	46	1.128	.564	.010	8	1	2	2
57	114	22	2.564	.855	.033	21	2	6	6
58	28	21	1.316	.658	.035	10	1	2	2

Table XIV Con't
(Case II Results)

BUREAU: CENTRAL OFFICES

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
59	5	48	.108	.108	.003	34	1	1	1
60	5	72	.072	.072	.001	10	1	1	1
61	67	25	.674	.899	.107	21	4	3	3
62	83	39	1.052	.702	.014	23	2	3	3
63	39	41	.937	.937	.358	10	1	1	1
64	78	63	.615	.615	.010	23	1	1	1
						20	1	1	1
65	44	58	.760	.760	.054	23	1	1	1
66	18	30	.607	.607	.052	8	1	1	1
67	62	30	.512	.682	.016	19	4	3	3
68	59	74	.803	.803	.054	23	1	1	1
69	75	64	1.164	.582	.008	8	1	2	2
70	85	35	.484	.807	.032	19	5	3	3
71	72	40	.894	.894	.097	10	2	2	2
72	7	88	.088	.088	.001	23	1	1	1
73	247	44	.788	.920	.036	10	1	0	0
						8	6	6	6
74	54	77	.708	.708	.031	10	1	1	1
75	96	140	.687	.687	.016	21	1	1	1
76	46	44	1.052	.526	.009	10	1	2	2
77	88	13	1.270	.907	.082	7	5	7	7
78	62	85	.734	.734	.032	14	1	1	1
79	270	60	.897	.897	.024	8	5	5	5
80	49	30	1.621	.810	.063	29	1	2	2
81	46	35	1.315	.657	.021	25	1	2	2
82	20	32	.651	.651	.058	13	1	1	1
83	83	103	.802	.802	.039	24	1	1	1
84	0	0	0.000	0.000	0.000	16	1	1	0
151	20	24	0.000	.866	.270	31	1	1	1
152	39	60	0.000	.645	.030	13	1	1	1
153	75	69	0.000	.543	.006	8	1	2	2

Table XIV Con't
(Case II Results)

BUREAU: FAMILY/CHILD SERVICES

	A	B	C	D	E	F	G	H	I
ST #	ARRIV RATE #/WK	SERVI RATE #/WRK/WK	PRSNT UTIL	OPT UTIL	AVE WAIT WK	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS	OPT STAFF
85	65	27	2.392	.797	.039	31	1	3	3
86	161	115	1.400	.700	.008	8	1	2	2
87	78	47	1.630	.815	.041	26	1	2	2
88	39	31	1.258	.629	.021	10	1	2	2
89	143	92	1.547	.773	.016	23	1	2	2
90	213	167	1.271	.635	.004	10	1	2	2
91	119	74	1.598	.799	.024	21	1	2	2
92	288	51	1.889	.944	.050	19	3	6	6
93	72	63	1.142	.571	.008	21	1	2	2
94	192	167	1.149	.575	.003	23	1	2	2
95	54	66	.821	.821	.069	10	1	1	1
96	23	28	.810	.810	.147	21	1	1	1
97	374	47	1.304	.978	.110	19	6	8	8
98	239	54	1.468	.881	.022	23	3	5	5
99	36	54	.664	.664	.036	10	1	1	1
100	88	71	1.236	.618	.009	23	1	2	2
101	18	30	.603	.603	.050	8	1	1	1
102	62	24	2.575	.858	.072	21	1	3	3
103	65	14	2.307	.923	.150	19	2	5	5
104	39	30	1.302	.651	.024	10	1	2	2
105	44	33	1.335	.668	.024	21	1	2	2
106	18	30	.607	.607	.052	21	1	1	1
107	33	38	.868	.868	.169	21	1	1	1
110	65	109	0.000	.593	.013	19	0	1	1
111	0	0	0.000	0.000	0.000	21	1	0	0
112	52	40	1.297	.649	.018	23	1	2	2
113	0	0	0.000	0.000	0.000	8	1	0	0
114	72	44	1.656	.828	.050	21	1	2	2
115	270	39	1.149	.985	.228	19	6	7	7
116	36	17	2.051	.684	.028	26	1	3	3
117	36	41	.868	.868	.157	10	1	1	1
118	83	84	.986	.986	.837	23	1	1	1
119	132	114	1.164	.582	.004	8	1	2	2
120	65	73	.883	.883	.102	21	1	1	1
121	223	40	1.857	.928	.047	19	3	6	6
122	15	41	.373	.373	.014	23	1	1	1
123	7	22	0.000	.354	.025	8	0	1	1
124	65	28	2.300	.767	.030	21	1	3	3

Table XIV Con't
(Case II Results)

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
125	229	33	3.466	.990	.437	19	2	7	7
126	44	37	1.172	.586	.014	23	1	2	2
127	52	48	1.085	.542	.009	8	1	2	2
128	83	38	2.155	.718	.016	21	1	3	3
129	158	21	1.832	.916	.051	19	4	8	8
130	143	132	1.077	.538	.003	23	1	2	2
131	80	154	.523	.523	.007	10	1	1	1
132	18	44	.412	.412	.016	21	1	1	1
133	145	41	1.175	.881	.038	19	3	4	4
134	80	65	1.238	.619	.010	19	1	2	2
135	62	79	.785	.785	.046	23	1	1	1
136	31	108	.288	.288	.004	8	1	1	1
137	59	50	1.174	.587	.010	21	1	2	2
138	288	48	1.485	.990	.327	19	4	6	6
139	80	56	1.424	.712	.018	23	1	2	2
140	101	68	1.477	.738	.017	10	1	2	2
141	26	15	1.736	.868	.203	21	1	2	2
142	72	53	1.374	.687	.017	21	1	2	2
143	619	36	2.101	.989	.133	19	8	17	17
144	15	90	.174	.174	.002	27	1	1	1
145	130	85	1.526	.763	.016	19	1	2	2
146	23	24	.955	.955	.855	8	1	1	1
147	57	30	1.880	.940	.250	25	1	2	2
148	33	30	1.098	.549	.014	13	1	2	2
149	44	29	1.489	.745	.042	8	1	2	2
150	216	12	4.158	.978	.189	10	4	17	17

A comparison of Table XIV results against those found in Table XIII will reveal that the optimal staff allocation solutions are not identical, due to the 10% increase in the arrival rate of matters. For example, Station No. 2 requires 3 workers rather than 2, as was denoted in Case I Solution (Table XIII) because the arrival rate to this station increased from 104 to 114 cases. The same can be said about Station No. 15. Under this scenario, this station needs 21 grade 19 workers and 8 grade 17 workers, whereas Case 1 Staffing solution calls for 18 grade 21 and 8 grade 17 Workers.

Finally, due to the nonlinear relationships that exist between resources and demand, the proportion increase in the demand for service (manifested in terms of arrival rate to the stations) is not identical to the proportional increase in the resource needs. The demand for services in this instance was increased by 10% whereas the payroll budget and staffing needs were increased by 6% & 6.3% respectively, over Case I Solutions.

C. Case III Results

Recall that Case III-Scenario calls for deriving solutions under a highly restricted weekly payroll configuration which is 5% below the Fall of 1989 budget. To ascertain these solutions, the model was used to conduct a sensitivity analysis. The solutions for this scenario are tabulated in Table XV.

Under this restricted budget configuration, only 361 workers and weekly payroll budget of $210,098 are needed. However, with these restricted resources, the CSA's system can process an arrival rate of matters which is 16.7% below the Fall of 1989 arrival rate. Hence, Station No. 1, for example, can handle an arival rate which is no more than 21 matters per week, whereas during the Fall of 1989 arrival rate of that station was 26 matters (items) per week, as was denoted in Table XIII. On the other hand, Station 15 can handle no more than 1,334 items per week, whereas the 1989 arrival rate was 1,602 as denoted earlier in Table XIII.

Notice that the solutions presented in Table XV call for staff reduction (release) in certain stations. Hence, several staff members affiliated with stations whose arrival rate is zero, were released because no workers exchangeability (or transfer) information was available for these workers.

Table XV
Case III Results
for the
COMMUNITY SERVICES STUDY

5% BUDGET REDUCTION OF CURRENT BUDGET (Fall 1989)

16.7% ARRIVAL REDUCTION

NUMBER OF REQUIRED EMPLOYEES : 361
NUMBER OF PRESENT EMPLOYEES : 384
TOTAL REQUIRED WEEKLYPAYROLL : $ 210098.00
TOTAL PRESENT WEEKLY PAYROLL : $ 221698.00

SYSTEM OPTIMIZATION INDEX : 8.2822

BUREAU: CHILD PROTECTIVE SERVICES

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
1	21	63	.342	.342	.008	29	1	1	1
2	86	57	0.000	.759	.024	8	0	2	2
3	143	115	.416	.625	.006	26	3	2	2
4	47	84	.559	.559	.015	25	1	1	1
5	39	100	.394	.394	.006	23	1	1	1
6	139	160	.291	.874	.043	8	3	1	1
7	147	118	.621	.621	.005	10	2	2	2
8	27	41	.332	.663	.047	19	2	2	1
9	19	59	.165	.330	.008	23	2	1	1
10	124	160	.388	.776	.022	8	2	1	1
11	388	58	.514	.955	.047	19	13	8	7
12	7	13	.575	.575	.099	21	1	1	1
13	277	114	.303	.807	.010	23	8	3	3
14	244	109	.559	.745	.007	10	4	3	3
15	1334	62	.476	.973	.023	19	37	14	14
						17	5	5	5
						17	3	3	3
16	128	52	.307	.819	.024	21	8	3	3
17	139	85	.272	.817	.024	10	6	2	2
18	134	64	.414	.690	.008	23	5	3	3
19	141	41	.679	.848	.027	21	5	4	4
20	341	58	1.951	.976	.110	21	3	6	6
21	753	43	.619	.963	.029	19	28	19	18
22	116	66	.352	.881	.052	10	5	2	2
23	185	108	.189	.853	.024	10	5	3	2
						8	4	0	0
24	21	38	.571	.571	.035	23	1	1	1
25	39	32	.175	.613	.019	21	6	0	0
						19	1	3	2
26	29	116	.127	.253	.003	8	2	1	1
27	171	134	.318	.636	.005	19	1	1	0
						15	3	3	2

Table XV (Con't)
(Case III Solutions)

BUREAU: ADULT SERVICES

	A	B	C	D	E	F	G	H	I
ST #	ARRIV RATE #/WK	SERVI RATE #/WRK/WK	PRSNT UTIL	OPT UTIL	AVE WAIT WK	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS	OPT STAFF
28	84	64	1.324	.662	.012	29	1	2	2
29	177	88	.999	.666	.005	13	1	1	0
						8	1	2	3
30	57	29	1.937	.968	.511	26	1	2	2
31	59	45	1.309	.654	.017	26	1	2	2
32	68	68	1.012	.506	.005	10	1	2	2
33	203	188	1.075	.537	.002	23	1	2	2
34	648	64	1.007	.916	.012	21	6	6	6
						19	4	5	5
35	98	89	1.098	.549	.005	8	1	2	2
36	90	81	1.118	.559	.006	23	1	2	2
37	102	89	1.143	.572	.005	10	1	2	2
38	279	52	1.067	.889	.021	21	1	0	0
						19	4	7	6
39	57	62	.915	.915	.172	4	1	1	1
40	5	29	.202	.202	.009	23	1	1	1
41	47	125	.376	.376	.005	10	1	1	1
42	193	37	1.289	.859	.020	19	4	7	6
43	70	35	1.998	.999	12.417	10	1	2	2
44	151	123	1.228	.614	.005	23	1	2	2
46	240	51	1.161	.929	.045	21	1	1	1
						19	3	5	4
47	72	69	1.056	.528	.006	10	1	2	2
48	0	0	0.000	0.000	0.000	23	1	0	0
49	0	0	0.000	0.000	0.000	10	1	0	0
50	0	0	0.000	0.000	0.000	21	1	0	0
						19	3	0	0
51	1	90	.011	.022	.000	10	1	0	0
						4	1	1	1
52	47	27	1.714	.857	.100	23	1	2	2
53	45	73	.619	.619	.022	10	1	1	1
54	222	44	.999	.999	4.005	21	1	1	0
						19	4	5	5
55	27	27	1.009	.504	.012	23	1	2	2
56	39	46	.854	.854	.127	8	1	1	1
57	86	22	1.942	.971	.360	21	2	5	4
58	21	21	.997	.498	.015	10	1	1	2

Table XV (Con't)
(Case III Solutions)

BUREAU: CENTRAL OFFICES

ST #	A ARRIV RATE #/WK	B SERVI RATE #/WRK/WK	C PRSNT UTIL	D OPT UTIL	E AVE WAIT WK	F WORKER GRADE	G PRSNT STAFF	H STAFF AFTER SHIFTS	I OPT STAFF
59	3	48	.082	.082	.002	34	1	1	1
60	3	72	.055	.055	.001	10	1	1	1
61	51	25	.511	.681	.019	21	4	3	3
62	63	39	.797	.797	.044	23	2	2	2
63	29	41	.710	.710	.059	10	1	1	1
64	59	63	.466	.932	.216	23	1	1	0
						20	1	1	1
65	33	58	.575	.575	.023	23	1	1	1
66	13	30	.460	.460	.028	8	1	1	1
67	47	30	.387	.775	.049	19	4	3	2
68	45	74	.608	.608	.021	23	1	1	1
69	57	64	.882	.882	.115	8	1	2	1
70	65	35	.367	.916	.148	19	5	3	2
71	55	40	.677	.677	.021	10	2	2	2
72	5	88	.067	.067	.001	23	1	1	1
73	187	44	.597	.836	.017	10	1	0	0
						8	6	5	5
74	41	77	.536	.536	.015	10	1	1	1
75	72	140	.520	.520	.008	21	1	1	1
76	35	44	.797	.797	.088	10	1	1	1
77	67	13	.962	.962	.341	7	5	5	5
78	47	85	.556	.556	.015	14	1	1	1
79	205	60	.679	.849	.019	8	5	4	4
80	37	30	1.227	.614	.020	29	1	2	2
81	35	35	.996	.498	.009	25	1	1	2
82	15	32	.493	.493	.030	13	1	1	1
83	63	103	.607	.607	.015	24	1	1	1
84	0	0	0.000	0.000	0.000	16	1	1	0
151	15	24	0.000	.656	.079	31	1	1	1
152	29	60	0.000	.488	.016	13	1	1	1
153	57	69	0.000	.822	.067	8	1	1	1

Table XV Con't
(Case III Solutions)

BUREAU: FAMILY/CHILD SERVICES

	A	B	C	D	E	F	G	H	I
ST #	ARRIV RATE #/WK	SERVI RATE #/WRK/WK	PRSNT UTIL	OPT UTIL	AVE WAIT WK	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS	OPT STAFF
85	49	27	1.811	.906	.167	31	1	2	2
86	122	115	1.060	.530	.003	8	1	2	2
87	59	47	1.234	.617	.013	26	1	2	2
88	29	31	.953	.953	.651	10	1	2	1
89	108	92	1.171	.586	.006	23	1	2	2
90	161	167	.962	.962	.152	10	1	1	1
91	90	74	1.210	.605	.008	21	1	2	2
92	218	51	1.430	.858	.019	19	3	6	5
93	55	63	.865	.865	.100	21	1	1	1
94	145	167	.870	.870	.040	23	1	1	1
95	41	66	.621	.621	.025	10	1	2	1
96	17	28	.613	.613	.055	21	1	1	1
97	283	47	.987	.987	.267	19	6	7	6
98	181	54	1.112	.834	.018	23	3	4	4
99	27	54	.503	.503	.018	10	1	1	1
100	67	71	.936	.936	.206	23	1	1	1
101	13	30	.457	.457	.028	8	1	1	1
102	47	24	1.950	.975	.789	21	1	3	2
103	49	14	1.747	.874	.103	19	2	5	4
104	29	30	.986	.493	.011	10	1	1	2
105	33	33	1.011	.506	.010	21	1	2	2
106	13	30	.460	.460	.028	21	1	1	1
107	25	38	.657	.657	.049	21	1	1	1
110	49	109	0.000	.449	.007	19	0	1	1
111	0	0	0.000	0.000	0.000	21	1	0	0
112	39	40	.982	.982	1.391	23	1	2	1
113	0	0	0.000	0.000	0.000	8	1	0	0
114	55	44	1.254	.627	.015	21	1	2	2
115	205	39	.870	.870	.022	19	6	7	6
116	27	17	1.553	.777	.086	26	1	2	2
117	27	41	.658	.658	.046	10	1	1	1
118	63	84	.747	.747	.035	23	1	1	1
119	100	114	.881	.881	.065	8	1	2	1
120	49	73	.669	.669	.027	21	1	1	1
121	169	40	1.406	.844	.020	19	3	6	5
122	11	41	.283	.283	.009	23	1	1	1
123	5	22	0.000	.268	.017	8	0	1	1
124	49	28	1.742	.871	.111	21	1	2	2

Table XV Con't
(Case III Solutions)

	A	B	C	D	E	F	G	H	I
ST #	ARRIV RATE #/WK	SERVI RATE #/WRK/WK	PRSNT UTIL	OPT UTIL	AVE WAIT WK	WORKER GRADE	PRSNT STAFF	STAFF AFTER SHIFTS	OPT STAFF
125	173	33	2.625	.875	.027	19	2	7	6
126	33	37	.887	.887	.209	23	1	1	1
127	39	48	.821	.821	.096	8	1	2	1
128	63	38	1.632	.816	.052	21	1	2	2
129	120	21	1.388	.925	.082	19	4	7	6
130	108	132	.815	.815	.033	23	1	1	1
131	61	154	.396	.396	.004	10	1	1	1
132	13	44	.312	.312	.010	21	1	1	1
133	110	41	.890	.890	.059	19	3	4	3
134	61	65	.937	.937	.229	19	1	2	1
135	47	79	.595	.595	.018	23	1	1	1
136	23	108	.218	.218	.003	8	1	1	1
137	45	50	.889	.889	.158	21	1	2	1
138	218	48	1.124	.899	.031	19	4	6	5
139	61	56	1.079	.539	.007	23	1	2	2
140	76	68	1.118	.559	.007	10	1	2	2
141	19	15	1.314	.657	.051	21	1	2	2
142	55	53	1.041	.520	.007	21	1	2	2
143	469	36	1.591	.979	.091	19	8	14	13
144	11	90	.131	.131	.002	27	1	1	1
145	98	85	1.156	.578	.006	19	1	2	2
146	17	24	.723	.723	.106	8	1	2	1
147	43	30	1.424	.712	.034	25	1	2	2
148	25	30	.831	.831	.160	13	1	1	1
149	33	29	1.128	.564	.016	8	1	2	2
150	163	12	3.149	.969	.167	10	4	13	13

For example, one grade 19 worker has been released from Station No. 21. Similarly, one grade 10 worker has been released from Station No. 23.

Also, notice that the average waiting time of matters for all, but Stations 43, 54 and 112 seem to be reasonable. The expected waiting time of matters at these stations exceed a period of one week.

Finally, the 5% decrease in the payroll budget (of 1989) calls for a 6.3% reduction of the Fall of 1989 staffing level as well as a concurrent 16.7% reduction in the arrival rate of matters to the system. Finally, notice that these percentage decreases are not identical due to non-linear relationships that exist between them, accentuated by the marginal analysis model.

D. Ramification of the Findings

The findings seem to indicate that the weekly number of requested services and administratively related matters demanded, rather than the caseload, or number of clients seen should be used to indicate workload because it can be used to ascertain the entire workflow pattern or transactions associated with the processing of a given case record. These transactions reflect both repeated visits and serial flow of matters between stations. In other words, this recursive processing of matters implies that a service or a client-related action (matter) initiated in one station could be transferred (serially) to other stations for further processing and subsequently be returned to the originating station. Since each of these transfers is regarded as a transaction, several stations may contribute to the cumulative processing effort (measured in minutes) of a given matter.

Since this Division is composed of a network of stations engaged in a sequential processing of matters, the ratios of supervisor/workers and clericals/supervisor are not constant. Rather these ratios are influenced by the frequency a matter must visit a given station for processing purposes.

The study also revealed that several supervisory and worker stations are overburdened by the amount of service and administratively related matters they must handle while related downstream stations are not receiving work as freely as they should. This administrative paradox can be attributed to the prevailing practice in which supervisory stations, in particular, tend to be involved in non-supervisory functions by acting as:

- Substitute Worker;
- Monitor;

- Auditor; and
- Referral Unit.

This problem, however could be mitigated through the:

- Establishment of shorter supervisory span of control through the creation of new positions such as lead worker and assistant supervisor;

- Streamlining the daily operation of the programs through the identification of specific tasks associated with the processing of the various matters or products and reassigning to workers some of the tasks currently carried out by supervisors; and

- Assignment of certain matters currently processed by the supervisors to the newly created positions of lead worker and assistant supervisor.

IV. MISCELLANEOUS ANALYSIS

In addition to the staffing allocation analyses presented thus far, descriptive statistical methods were used for the purpose of providing management with information concerning the:

- Arrival rate of matters;
- Processing cost of matters; and
- Inter-station matters transaction.

A. The Matter Arrival Rates

Recall that the matters arrival rate to the CSA's System reflects the weekly demanded level of services. The weekly arrival rate to a station on the other hand, is the sum of matters arriving to that station from the "rest of the world" and from other stations of the system. Since several stations are involved in the processing of a given matter, the arrival rate to a station tends to be higher than the arrival rate to the system.

The weekly number of arrivals to all stations of the system are tabulated by matter in Table XVI. It should be noted that these arrivals do not reflect the level of services demanded from the CSA; rather, they denote the sum of the input and throughput of matters.

A cursory examination of this table will reveal that these arrivals are grouped by program and generic matters. Also, the four columns of information found in this table denote the following:

TABLE XVI
THE CSA
MATTER ARRIVAL RATES(#/WEEK)

BUREAU: CHILD PROTECTIVE SERVICES

May 1990 estimations
Increase/Decrease

MAT	TITLE	PRESENT	10%	20%	-10%
1	Initial 2221 Processing	296.	325.	355.	266.
2	Contact with reporter	76.	83.	91.	68.
3	24 Hour contact	36.	39.	43.	32.
4	Field Visit Investigation (Ongoing)	355.	391.	426.	320.
6	Services to Courts	33.	36.	40.	30.
7	Protective Custody Issues	31.	34.	37.	28.
8	Placement (Foster Care Etc.)	38.	42.	45.	34.
9	Case Determination and consultation	201.	221.	241.	181.
10	Opening Of Case (WMS,CCRS,COO)	90.	99.	108.	81.
11	Progress notes/dictation (generic matter)	1664.	1830.	1997.	1497.
13	Collateral Contact (generic matter)	542.	596.	650.	488.
14	Court related petitions	222.	245.	267.	200.
15	Court appearances and related	215.	237.	258.	194.
16	Fair hearing and related	73.	81.	88.	66.
17	Advocacy Services	14.	16.	17.	13.
18	Comprehensive Case Review Conference	95.	104.	114.	85.
19	Foster Home Visits	5.	5.	6.	4.
20	Arrange Services To Child	50.	55.	60.	45.
21	Arrange Services To Family	109.	120.	131.	98.
22	Direct Services To Child & Family	128.	141.	153.	115.
24	Inter-agency Consultation Case Related	144.	159.	173.	130.
25	Supervised Visitation	104.	115.	125.	94.
26	State Reports 2200 Series	54.	60.	65.	49.
27	Case Closing	388.	427.	466.	349.
28	Emergency Non-CPS Services	201.	221.	241.	181.
80	Maint. & Inq. Of Welfare Mgmt Serv.	137.	151.	165.	124.
81	Maint. & Inq. Of Welfare Mgmt Non-Svc	28.	31.	34.	26.
82	Entry Of Info To CCRS	40.	44.	48.	36.
168	Case plan preparation (UCR's) (generic)	220.	242.	264.	198.

BUREAU: ADULT SERVICES

MAT	TITLE	PRESENT	10%	20%	-10%
11	Progress notes/dictation	(Generic matter-see above)			
13	Collateral Contact	"	"	"	"
27	Case Closing	388.	427.	466.	349.
38	Adult Service Application	102.	112.	122.	92.
39	Client Benefit Application	76.	83.	91.	68.
40	Community Service Application	19.	21.	23.	17.
41	Application For Other Services	31.	34.	37.	28.
42	Information and Referral	492.	541.	591.	443.
43	Field Assessment/Investigation	80.	89.	97.	72.
44	Office Assessment/Investigation	137.	151.	165.	124.
45	Service Plan	64.	70.	77.	58.
47	Re-Determination	133.	146.	159.	119.
48	Client Visit/Protective Services	43.	47.	51.	38.
49	Client Visit/ Home Management	26.	29.	31.	23.
50	Client Visit/ Health	24.	26.	28.	21.
51	Client Visit/ Financial	57.	62.	68.	51.
52	Client Visit/ Resident. Place.	5.	5.	6.	4.
53	Office Financial Management Services	85.	94.	102.	77.
54	Office Case Management	142.	156.	170.	128.
57	Crisis Intervention	43.	47.	51.	38.
58	Case Specific Conference	331.	364.	398.	298.

TABLE XVI (Continued)

BUREAU: CENTRAL OFFICE

MAT	TITLE	PRESENT	10%	20%	-10%
9	Case Determination and consultation	201.	221.	241.	181.
14	Court related petitions	222.	245.	267.	200.
126	Home Studies	116.	128.	139.	104.
193	Referral activities	38.	42.	45.	34.
221	Recruitment/Foster	21.	23.	26.	19.
223	Certification/ Foster	5.	5.	6.	4.
224	Certification/ Day	17.	18.	20.	15.
226	Re-Certification: Foster Care	45.	49.	54.	40.
228	Request For Placement/ Foster	2.	3.	3.	2.
230	Match & Connect / Foster only	2.	3.	3.	2.
232	Evaluation of Interstate Care	2.	3.	3.	2.
235	State Central Registry Clearances	2.	3.	3.	2.
236	Inquiry and Screening (Telephone)	14.	16.	17.	13.
238	Emergency Short Term Foster Care	2.	3.	3.	2.
247	Contract: Institutional Foster Care	21.	23.	26.	19.
248	Contract: Day Care Center	14.	16.	17.	13.
249	Contract: Consultants	5.	5.	6.	4.
251	Contract: Homemaker	5.	5.	6.	4.
252	Contract: Child Abuse Preventive	24.	26.	28.	21.
257	Contract: Food Support Services	2.	3.	3.	2.
258	Contract: Other	12.	13.	14.	11.
262	Contract Monitoring/Compliance	26.	29.	31.	23.
292	Family & Child. Services Bureau	19.	21.	23.	17.
293	Child Protective Bureau	116.	128.	139.	104.
309	Initial Request Processing	31.	34.	37.	28.
339	Initialize Services	5.	5.	6.	4.
342	Case Conferences	7.	8.	9.	6.
356	Billing from POS provider	5.	5.	6.	4.
368	Operate Management System	66.	73.	80.	60.
369	Operate Payment Authorization Process	161.	177.	193.	145.
371	Monitor system/Advise line staff.	38.	42.	45.	34.
398	Evaluation: Inrst/Intra/Surr Courts.	5.	5.	6.	4.

TABLE XVI (Continued)

BUREAU: FAMILY CHILD SERVICES

MAT	TITLE	PRESENT	10%	20%	-10%
8	Placement (Foster Care Etc.)	38.	42.	45.	34.
10	Opening Of Case (WMS,CCRS,COO)	90.	99.	108.	81.
11	Progress notes/dictation	(Generic matter-see above)			
13	Collateral Contact	"	"	"	"
14	Court related petitions	222.	245.	267.	200.
15	Court appearances and related	215.	237.	258.	194.
16	Fair hearing and related	73.	81.	88.	66.
18	Comprehensive Case Review Conference	95.	104.	114.	85.
25	Supervised Visitation	104.	115.	125.	94.
71	Collateral Contact (Resources)	107.	117.	128.	96.
72	Supervision Of Child	40.	44.	48.	36.
73	Supervision Of Foster Home	69.	75.	82.	62.
74	Supervision of POS Agencies	28.	31.	34.	26.
76	Mandated Child/Parent Visit.	36.	39.	43.	32.
77	Mandated Natural Parent Visit.	59.	65.	71.	53.
78	Case Plan Preparation	95.	104.	114.	85.
80	Maint. & Inq. Of Welfare Mgmt Serv.	137.	151.	165.	124.
81	Maint. & Inq. Of Welfare Mgmt Non-Svc	28.	31.	34.	26.
82	Entry Of Info To CCRS	40.	44.	48.	36.
83	Re-placements	38.	42.	45.	34.
88	Special Placements	21.	23.	26.	19.
89	Adoption Activities & Foster Care	24.	26.	28.	21.
90	Case Specific Advocacy Related	33.	36.	40.	30.
91	State Utilization Review Process	9.	10.	11.	9.
92	Independent Living Assessment	2.	3.	3.	2.
93	Catch all of unnamed matters	21.	23.	26.	19.
105	Case initiation	14.	16.	17.	13.
106	Eligibility determination	76.	83.	91.	68.
107	Placement services	21.	23.	26.	19.
109	Camp application initialization	2.	3.	3.	2.
110	Determination of camp placement	2.	3.	3.	2.
114	WMS activity	47.	52.	57.	43.
123	Recruitment Potential Adoptive Parents	2.	3.	3.	2.
124	Orientation Potential Adoptive Parents	2.	3.	3.	2.
125	Application Processing	5.	5.	6.	4.
126	Home Studies	116.	128.	139.	104.
127	Matching Child/Potential Adoptive Parent	12.	13.	14.	11.
128	Supervision of Adoption	28.	31.	34.	26.
130	Subsidy of adoptive parents	21.	23.	26.	19.
131	State Registry	2.	3.	3.	2.
133	Guardianship process	9.	10.	11.	9.
134	Post Adoption Activities	12.	13.	14.	11.
144	Scheduling	17.	18.	20.	15.
145	Requesting Records and UCR	7.	8.	9.	6.
146	Prepare audit chk list/pre-meeting notes	85.	94.	102.	77.

TABLE XVI (Continued)

Family/Child Services (cont'd)

MAT	TITLE	PRESENT	10%	20%	-10%
150	Prepare Case Review Summary	52.	57.	62.	47.
151	Identification of children in care	5.	5.	6.	4.
152	Set up case files	21.	23.	26.	19.
153	Preparation of invitational letters	14.	16.	17.	13.
161	Intake and referral	14.	16.	17.	13.
162	Telephone and personal intake interviews	17.	18.	20.	15.
163	Intern process Prv,UM,DAS,Intrstate,CPS	45.	49.	54.	40.
168	Case plan preparation (UCR's)	(Generic matter - see above)			
171	Transfer to external units	5.	5.	6.	4.
172	Transfer within bureau	2.	3.	3.	2.
176	Adoption/Unmarried mothers activities	9.	10.	11.	9.
177	Monitoring POS preventive services	5.	5.	6.	4.
178	Sagamore treatment/discharge meetings	5.	5.	6.	4.
182	Preventive excess rent eligibility	9.	10.	11.	9.
193	Referral activities	38.	42.	45.	34.
196	Client home visits	5.	5.	6.	4.
197	Client Case Plan Preparation	2.	3.	3.	2.
200	Other case specific reports/activities	12.	13.	14.	11.
226	Re-Certification: Foster Care	45.	49.	54.	40.
273	Permanent Neglect: Prep. and Review	31.	34.	37.	28.
281	Foster Care Review: Prep and Rev.	12.	13.	14.	11.
283	358A Petitions: Prep and Review	31.	34.	37.	28.
409	Supervision of Day Care Homes/Centers	43.	47.	51.	38.
412	Validating/Creating Medical Cards	2.	3.	3.	2.
413	Eligibility Determination/Fed.&State Rei	2.	3.	3.	2.

GENERIC MATTER

MAT	TITLE	PRESENT	10%	20%	-10%
5	Case Consultation with Supervisor	615.	677.	738.	554.
23	Client Transportation	196.	216.	236.	177.
30	Non-case specific reporting	270.	297.	324.	243.
31	Unit Management/Non-case	641.	706.	770.	577.
32	Bureau Management/Non-case	414.	456.	497.	373.
33	Interagency Meetings/Non-case	76.	83.	91.	68.
34	Community Education	5.	5.	6.	4.
35	Supervision/Case related	329.	362.	395.	296.
36	Training	208.	229.	250.	187.
37	Audit activities	73.	81.	88.	66.
42	Information and Referral	492.	541.	591.	443.
59	Case Review	471.	518.	565.	424.
60	Client Phone Contact	1179.	1296.	1414.	1061.
70	Case Assignment and control	514.	565.	616.	462.
87	Maintaining T & A Sheets	234.	258.	281.	211.
108	Recertification	192.	211.	230.	173.
165	Mandated case worker visitation	320.	351.	383.	288.
404	Administration of Vehicles	24.	26.	28.	21.
405	Vehicle Maintenance	14.	16.	17.	13.
406	Division Management	21.	23.	26.	19.
407	Operations Support	286.	315.	344.	258.
408	Processing Custody Papers	7.	8.	9.	6.
450	Worker phone contact	556.	612.	667.	501.
451	Technical Assistance (outside department	71.	78.	85.	64.
452	Technical Assistance (inside department)	97.	107.	116.	87.

- The present (May 1990 Estimation) arrival rate;
- A 10% increase in the (May 1990) arrival rates;
- A 20% increase in the (May 1990) arrival rates; and
- A 10% decrease in the (May 1990) arrival rates.

B. Matter Transaction and Processing Cost

The transaction (or multiplier) index as was noted earlier, denotes the average number of transfers a matter must go through for processing purposes. In other words, the multiplier denotes the average number of stations a matter must "visit" for processing purposes.

The transaction index has a partial bearing upon the matter's processing cost. Specifically, a high transaction index implies that numerous stations are involved in the processing of the matter in question. Therefore the cumulative effort devoted to process that matter as well as its processing cost, are likely to be higher than a matter whose index has a low value.

The processing cost and the corresponding transaction index are tabulated by matter in Table XVII. An examination of this table will reveal that it contains two columns of numerical information entitled: a) cost and b) number of stations "visited." The numerical values listed under the heading "number of station visited" are the transaction indices. For example, the cost of processing matter No. 1 is $2.51 whereas, its multiplier has a value of 2.012. That is to say that matter Number 1 was processed on the average, by 2.012 stations. Finally, it should be noted that a few matter's codes appearing in Table XVII have no corresponding matter's names. Although these codes were erroneously specified during the data collection phase, they were included in this study as a "catch all" for other matters processed by the system.

C. The Weekly Arrival Rate to the System

Recall that the weekly arrival rates denoted earlier in Table XVI are composed of both the input and throughput to the system. Specifically, each of these weekly arrival rates is the sum of:

- The direct input of a matter from "the rest of the world" (ROW) to the CSA's systems; and
- The internal (or indirect) input of a matter arriving to a given station from other stations of the system.

TABLE XVII

THE CSA MATTER PROCESSING COSTS AND MULTIPLIERS

MAT #	TITLE	COST ($)	# STATIONS VISITED
1	Initial 2221 Processing	2.51	2.012
2	Contact with reporter	8.48	1.151
3	24 Hour contact	19.32	1.690
4	Field Visit Investigation (Ongoing)	19.86	2.277
5	Case Consultation with Supervisor	7.09	3.000
6	Services to Courts	23.41	2.834
7	Protective Custody Issues	20.11	2.600
8	Placement (Foster Care Etc.)	16.36	3.700
9	Case Determination and consultation	7.50	1.833
10	Opening Of Case (WMS,CCRS,COO)	9.93	4.857
11	Progress notes/dictation	8.72	4.216
13	Collateral Contact	5.50	2.780
14	Court related petitions	11.03	4.135
15	Court appearances and related	24.84	3.105
16	Fair hearing and related	10.84	2.700
17	Advocacy Services	15.49	1.000
18	Comprehensive Case Review Conference	19.15	1.905
19	Foster Home Visits	13.79	1.000
20	Arrange Services To Child	6.71	5.230
21	Arrange Services To Family	8.60	3.571
22	Direct Services To Child & Family	16.56	2.667
23	Client Transportation	27.33	2.450
24	Inter-agency Consultation Case Related	7.59	2.000
25	Supervised Visitation	41.23	4.625
26	State Reports 2200 Series	8.49	1.703
27	Case Closing	5.82	2.727
28	Emergency Non-CPS Services	3.92	1.034
*29		3.00	1.000
30	Non-case specific reporting	9.46	2.891
31	Unit Management/Non-case	10.89	3.511
32	Bureau Management/Non-case	15.08	3.997
33	Interagency Meetings/Non-case	33.32	3.429
34	Community Education	9.45	3.400
35	Supervision/Case related	7.62	2.680
36	Training	44.20	3.834
37	Audit activities	25.65	2.873
38	Adult Service Application	7.74	4.680
39	Client Benefit Application	11.28	2.909
40	Community Service Application	3.72	2.500
41	Application For Other Services	7.38	4.000
42	Information and Referral	5.49	3.013
43	Field Assessment/Investigation	26.47	4.250
44	Office Assessment/Investigation	6.38	2.852
45	Service Plan	8.57	3.600
47	Re-Determination	9.88	4.863
48	Client Visit/Protective Services	21.19	3.572
49	Client Visit/ Home Management	24.16	3.000
50	Client Visit/ Health	21.98	7.000

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*erroneous matters code specified during the data collection phase

TABLE XVII (continued)

MAT #	TITLE	COST ($)	# STATIONS VISITED
51	Client Visit/ Financial	26.33	1.000
52	Client Visit/ Resident. Place.	21.40	1.000
53	Office Financial Management Services	9.08	3.469
54	Office Case Management	9.99	2.302
57	Crisis Intervention	24.77	2.667
58	Case Specific Conference	5.42	3.500
59	Case Review	7.41	2.001
60	Client Phone Contact	4.59	1.928
66		2.26	3.000
68		10.88	1.000
70	Case Assignment and control	4.67	2.830
71	Collateral Contact (Resources)	9.14	4.579
72	Supervision Of Child	51.78	3.000
73	Supervision Of Foster Home	17.17	4.222
74	Supervision of POS Agencies	21.36	3.000
76	Mandated Child/Parent Visit.	33.64	4.000
77	Mandated Natural Parent Visit.	36.25	1.000
78	Case Plan Preparation	13.44	3.220
80	Maint. & Inq. Of Welfare Mgmt Serv.	5.82	4.332
81	Maint. & Inq. Of Welfare Mgmt Non-Svc	25.36	3.542
82	Entry Of Info To CCRS	8.18	4.259
83	Re-placements	21.60	4.545
87	Maintaining T & A Sheets	5.76	3.738
88	Special Placements	19.18	4.000
89	Adoption Activities & Foster Care	9.01	5.000
90	Case Specific Advocacy Related	15.20	6.572
91	State Utilization Review Process	11.95	4.000
92	Independent Living Assessment	15.85	1.000
93		6.84	2.313
95	Emergency Non-Foster Care Services	3.56	1.000
96		65.30	1.000
99		0.67	1.000

TABLE XVII (continued)

MAT #	TITLE	COST ($)	# STATIONS VISITED
101		19.97	1.000
105	Case initiation	11.48	9.667
106	Eligibility determination	19.49	3.909
107	Placement services	11.94	3.875
108	Recertification	9.93	4.008
109	Camp application initialization	21.32	1.000
110	Determination of camp placement	4.71	1.000
114	WMS activity	11.41	4.356
123	Recruitment Potential Adoptive Parents	13.95	3.000
124	Orientation Potential Adoptive Parents	25.41	2.000
125	Application Processing	9.97	2.600
126	Home Studies	22.87	4.182
127	Matching Child/Potential Adoptive Parent	18.40	4.800
128	Supervision of Adoption	39.35	3.000
130	Subsidy of adoptive parents	8.94	6.379
131	State Registry	16.23	3.000
133	Guardianship process	17.92	9.000
134	Post Adoption Activities	10.91	3.400
143		39.34	1.000
144	Scheduling	7.47	1.667
145	Requesting Records and UCR	8.91	2.679
146	Prepare audit chk list/pre-meeting notes	19.30	1.960
147	Pre-review conference	5.14	1.000
148		1.70	1.000
149	Post conference to log	0.71	2.056
150	Prepare Case Review Summary	7.42	3.531
151	Identification of children in care	12.02	1.000
152	Set up case files	5.85	1.000
153	Preparation of invitational letters	11.43	2.923
161	Intake and referral	10.50	4.333
162	Telephone and personal intake interviews	5.44	3.000
163	Intern process Prv,UM,DAS,Intrstate,CPS	9.18	2.364
165	Mandated case worker visitation	28.87	2.583
167		23.73	1.000
168	Case plan preparation (UCR's)	13.74	3.579
171	Transfer to external units	5.53	1.000
172	Transfer within bureau	6.02	2.273
176	Adoption/Unmarried mothers activities	14.78	6.000
177	Monitoring POS preventive services	4.20	6.667
178	Sagamore treatment/discharge meetings	19.97	1.000
182	Preventive excess rent eligibility	9.56	1.000
191	Case identification	7.67	1.000
193	Referral activities	2.11	3.000
196	Client home visits	30.25	2.000
197	Client Case Plan Preparation	34.94	1.000
200	Other case specific reports/activities	23.58	3.833

TABLE XVII (continued)

MAT #	TITLE	COST ($)	# STATIONS VISITED
221	Recruitment/Foster	19.96	1.500
222	Recruitment/ Day	13.53	1.000
223	Certification/ Foster	14.63	2.500
224	Certification/ Day	8.40	3.200
226	Re-Certification: Foster Care	12.10	4.000
227	Re-Certification: Day Care	10.38	1.000
228	Request For Placement/ Foster	11.93	2.000
229	Request For Placement/ Day	2.97	1.000
230	Match & Connect / Foster only	10.83	1.000
232	Evaluation of Interstate Care	3.84	1.000
235	State Central Registry Clearances	12.41	2.200
236	Inquiry and Screening (Telephone)	3.52	1.429
238	Emergency Short Term Foster Care	13.42	1.000
241		8.35	1.000
245		26.62	1.000
247	Contract: Institutional Foster Care	19.02	4.500
248	Contract: Day Care Center	13.32	3.000
249	Contract: Consultants	23.43	3.667
250	Contract: Domestic Violence	24.90	1.000
251	Contract: Homemaker	9.96	1.000
252	Contract: Child Abuse Preventive	12.88	1.000
257	Contract: Food Support Services	11.36	1.000
258	Contract: Other	9.90	2.800
259	Preparation of Proposals	4.94	4.500
262	Contract Monitoring/Compliance	11.42	3.500
271	Abandonment: Prep. and Review	17.05	5.000
272	Abandonment: Court Appearances	32.65	1.000
273	Permanent Neglect: Prep. and Review	15.01	8.000
275	Mental Ill/Retardation: Prep. and Review	19.05	2.000
279	Extension of Plcmnt 1055: Prep. and Rev.	11.28	1.000
280	Extension of Plcmnt 1055: Court Appear	21.77	5.909
281	Foster Care Review: Prep and Rev.	16.87	2.000
283	358A Petitions: Prep and Review	15.09	1.091
284	358A Petitions: Court Appearences	16.94	1.000
285	Logging Court Orders	21.77	3.851
292	Family & Child. Services Bureau	7.32	3.407
293	Child Protective Bureau	6.34	1.615
294	Adult Protective Services Bureau	5.75	3.611
295	Contract Preparation	11.13	1.000
300	716 Comprehensive Case Reviews	5.94	1.000
309	Initial Request Processing	6.74	4.667
339	Initialize Services	9.12	1.000
341	Medical Need & Payment Assessment	5.44	1.000
342	Case Conferences	6.94	1.000
343	Case Evaluation	2.18	2.667
354	Locate Service Provider	14.62	2.000
356	Billing from POS provider	3.76	6.200
367	Maintain Management System	12.50	3.000
368	Operate Management System	7.35	2.579
369	Operate Payment Authorization Process	10.75	3.455

MAT #	TITLE	COST ($)	# STATIONS VISITED
370	Technical Assistance	5.93	1.000
371	Monitor system/Advise line staff.	10.64	3.600
372	Monitor and maintain financial system	16.81	1.000
393		12.50	1.000
398	Evaluation: Inrst/Intra/Surr Courts.	8.68	1.000
399	Fingerprinting	13.47	5.000
400		3.75	1.000
401	Applicant Evaluation & Recommendations	23.29	1.000
403	Emergency Foster Home Supervision	0.23	1.000
404	Administration of Vehicles	18.04	2.000
405	Vehicle Maintenance	13.75	1.000
406	Division Management	33.55	4.475
407	Operations Support	13.10	5.982
408	Processing Custody Papers	6.74	1.000
409	Supervision of Day Care Homes/Centers	19.60	1.000
410	Distribution of Donated Commodities	3.09	1.000
412	Validating/Creating Medical Cards	3.18	1.000
413	Eligibility Determination/Fed.&State Rei	9.49	7.000
416	Community Relations	21.50	2.667
417	Publicity	4.30	1.000
419	Events (Picnics, Recognition Days, Etc.)	12.99	2.000
420	Contract Evaluation and Review	21.50	1.000
421	Program Evaluation and Review	34.40	1.000
450	Worker phone contact	3.44	2.667
451	Technical Assistance (outside department	19.02	1.470
452	Technical Assistance (inside department)	4.19	3.000
480		4.43	1.000
482		1.66	1.000
500		4.92	2.000
540		2.33	1.000
541		5.38	1.000

Therefore, a double counting exists in these rates. To estimate the weekly arrival rate to the system or the demand for services, one must divide the arrival rates found in Table XVI by their corresponding multipliers.

The arrival rate of matter No. 1 to the system for example, can be estimated by dividing this matter's number of arrivals found in Table XVI, by this matter's multiplier denoted in Table XVII, (296/2.012=147). Thus, Matter No. 1's weekly arrival rate (or direct input from ROW) to the system is 147. On the other hand, the arrival rate of matter No. 4 to the system is (355/2.277=156), whereas matter No. 27's arrival rate to the system is (388/2.727=142). These estimated figures, in essence, reflect the level of services and administratively related actions demanded from the CSA.

Chapter Six
SUMMARY & CONCLUSION

I. INTRODUCTION

This study was conducted for the purpose of providing administrators, supervisors, and workers alike with a unified perspective regarding the SCDSS operation. The work standards, performance indices and the resource allocation solutions generated by this study were developed in consideration of the federal, state and local governments' desire to improve the productivity of the Public Assistance and Social Services Programs. While this report emphasized the logic and reasoning behind the management analysis, its models were used as "decision support tools" to address the impact of "what if" scenarios, thereby avoiding a costly experimentation with alternative operational structures for the SCDSS.

The theoretical framework behind this research study is a blend of classical organization theory and management science techniques. Hence, the Client Benefit (CBA) and the Community Service (CSA) Divisions of the Suffolk County Department of Social Services were viewed as two separate service delivery organizations. Specifically, these Divisions were viewed as two mutually exclusive open queueing networks composed of processing stations which are engaged in recurrent administrative procedures to assure, on behalf of their clients, the processing of identifiable client and administratively related matters.

Since the term "organization" implies the existence of enduring organizational structure, administrative processes and recurrent work flow patterns [Bausky 1977], these Divisions were disaggregated into their organizational components (stations), and service-related matters processed by these stations were identified. Subsequently, data concerning the work effort devoted to process a particular matter by each of the stations, and the work flow patterns of matters, along with other data, were collected and processed in conjunction with the queueing theory and Fox's (1966) Marginal Analysis technique, for the purpose of addressing a major managerial predicament faced by the CBA and CSA Divisions, namely:

- What is the best composition of resources (i.e., payroll budget & employees) that would lead to a situation whereby these service delivery systems will "produce" an anticipated level of outputs associated with their program's mandated missions, without altering the: a) observed processing time of various matters by their respective processing stations, b) the operational structure of these Divisions and c) the work flow pattern between their stations.

II. THE METHODOLOGY

To address this managerial problem, we have used an amalgamation of discursive social services and organizational theories, along with management science techniques. In using this approach, the CBA and CSA were perceived to be composed of two "Open Queueing Networks" of stations linked together through the recurrent flow of matters. Hence, given the observed or desired processing levels of matters or cases per week (under alternative scenarios), the intent behind the application of Fox's (1966) Marginal Analysis Model was to determine the optimal number of workers needed for allocation to each of the stations. The CBA and the CSA's staff allocation solutions provided by this model were derived in context of the case record and matter processing activities, respectively. In applying this approach, an objective function and a set of resource allocation rules were embedded into the computer models to:

- o Minimize the waiting time a matter must spend at a station before being processed;
- o Utilize to best advantage the workers' performance flexibility;
- o Minimize the overburdened workload of busy stations; and
- o Assure that the total amount of time spent by a matter in these systems is no greater than four weeks.

In using these rules we tried to find the overall level of an efficiently allocated payroll budget necessary to meet an administrative performance measure based on the timely disposition of service related matters.

It should be noted that the optimal resource allocation models used in this analysis tend to equalize the workload of the stations' and matters' waiting time through the reassignment of the least busy staff to the busiest stations. The criteria of reassignment of staff members have been specified in the staff exchangeability matrix.

A. Information Generated

The application of this methodology allowed us to generate a uniform set of results (by station) concerning the efficiency aspects of the Client Benefit (CBA) and the Community Services (CSA) Divisions' operation, namely:

- The CBA & CSA systems' demanded level of services;
- The processing capacity by station;
- The time and cost of processing a given client and administratively related matters by each of the stations involved (i.e., work standards);
- The number of matters (items) waiting to be processed by a given station along with the amount of time spent by an item (or a matter) while waiting to be processed by that station;
- Productivity indices regarding the current and latent level of staff utilization in each station;
- Optimal distribution of staff members across the stations of the systems;
- Estimated "production" levels (of matters) and corresponding staff requirements (by station) under alternative administrative scenarios; and
- Estimated payroll budgets under alternative financial resources constraints.

Subsequently, these indices and measurements were used to draw inferences regarding the system operation and to suggest remedial actions to enhance the performance and productivity of these Divisions.

B. Limitation of this Study

Although it is recognized that a performance study should address both the efficiency and performance aspects of service delivery [Cordry & Tuttle 1984], this applied study deals with the efficiency aspect only. Therefore, this study does have certain limitations. By dealing with the efficiency aspect of the allocation of resources (i.e., staffing and payroll budget) within the SCDSS, the study ignores service delivery issues such as the:

- Client/worker relationships;

- Effectiveness of the services rendered by this department;
- Clients' satisfaction with the services rendered by the CBA and CSA segments of this department; and
- Quality of the services rendered.

III. INFERENCES DRAWN

Since the operation of these Divisions is not intuitively obvious, the application of this management science approach allowed us to gain a better understanding of the systems operation. Also, this approach allowed us to address the issue of efficient utilization of workers, without tampering with the observed work standards. Inferences drawn from this and related studies are as follows:

- The queueing network behavior exhibited by these service delivery systems precludes the application of a conventional management analysis. Therefore, a management science approach should be used to: a) resolve the work overburden and low work intensity problems found in certain supervisory and worker stations, b) accelerate the work flow velocity, and c) allocate the necessary resources (by station) so as to achieve a timely disposition of a given (or desired) volume of service and related administrative matters;
- Since these Divisions are composed of queueing networks of stations engaged in a sequential processing of matters, the ratios of supervisor/workers and clericals/supervisor are not constant. Rather these ratios are influenced by the frequency a matter must visit a given station for processing purposes;
- The supervisory stations found in the CSA system in particular, are overburdened by the amount of service-related matters they must process;
- The busy supervisory stations of the CBA in particular, tend to handle multiple non-management functions such as: a) substitute worker, b) monitor, c) auditor, and d) referral units;
- Although numerous workers were shifted from their customary stations to busier ones, the model's solutions call for hiring new workers to handle the increased demand for services. Thus, the CBA needs

7.8% additional workers, whereas the CSA requires an increase of 10.4% over the Fall of 1989 staff levels;

- Due to the queueing behavior exhibited by the CBA and CSA systems, a five percent reduction in their Fall 1989 budget will cause dramatic buildups of clients waiting for services;

- Since such a queue (of clients) may never dissipate in a situation of increasing demand for services and a simultaneous reduction in labor forces, clients, workers and politicians alike may find this situation intolerable; therefore the SCDSS may have no other recourse but to increase the number of hours its staff must work per week;

- Management should continue the policy of rewarding workers who: a) acquire diversified, rather than specialized skills and b) are willing to take additional responsibilities, thereby enhancing the flexibility and consequently the efficiency of the CBA and CSA operation;

- The inter-center (and inter-bureau) mail distribution should be carried out at least four times a day, thereby "smoothing" the work flow between stations, and consequently minimizing the waiting time a matter must spend before being processed; and

- Vacation leave should be scheduled by staff ahead of time. It should be spread over the entire year in such a way that no more than 10% of staff members are out at any given time.

IV. RAMIFICATION OF THE FINDINGS

In light of the budget deficit faced by Suffolk County, it has been advocated by concerned parties that the SCDSS should consider the options of: a) reducing the level of services provided to its clients, b) staff reduction which seemingly will merely prolong the waiting time for services and c) alleviating the staffing slack found in (numerous) stations whose optimal staff utilization index is below 0.30. These options, however, are not feasible due to the:

- Steady and unabated rise in the mandated program's caseload;

- Clients', workers' and politicians' diverse perceptions regarding the consequences of these options;

- Legal regulations mandating service caseloads and clients' limited waiting time for services;
- System's queueing behavior; and
- Fact that the work flow data collected during the Summer/Fall 1989, may reflect a vacation season slowdown of activities; therefore the slack level found in the systems may not be sufficient to alleviate the consequences of anticipated staffing shortage, and budget cuts.

Thus, to mitigate the unwarranted consequences of a budget reduction and the simultaneous rise in the Public Assistance and Social Services Programs' caseload [see Pear, R. in the N.Y. Times August 20, 1990], the SCDSS may have no other recourse but to consider staffing and management actions which are beyond the scope of this study. Such actions could include the:

- Establishment of a shorter supervisory span of control, through the creation of new positions such as lead worker and assistant supervisor for the CBA's Division, in particular;
- Streamlining the daily operation of the programs through the identification of specific tasks associated with the processing of the various matters and reassigning some of the tasks currently carried out by the CBA's supervisors to their workers; and
- Assignment of certain matters currently processed by the CBA's supervisors to the newly created positions of lead worker and assistant supervisor;
- Implementation of the "work partitioning" practice in which the higher grade workers would be involved, primarily, with decision making, whereas the lower grade workers would handle preliminary intake activities and subsequent follow ups. A hierarchical worker - management organization would be required to effectively implement this practice;
- Implementation of a "scheduling arrivals" or an appointment scheme in order to even the workload and minimize workload variability, thereby mitigating the congestion problems found in these systems;

- Creating "multi-purpose worker" positions to handle caseload variability across all programs. Such workers should be able to handle a spectrum of responsibilities to mitigate the negative impact of work "surges." If the surges cannot be handled by these workers, over-time should be allowed, inasmuch as it is less costly than hiring new workers;

- Implementation of a longer work week. Although labor will translate this policy as a pay rate cut, it is an alternative that will save jobs; and

- Improving the computerized data base system, thereby allowing workers to track clients and to gather the necessary information concerning services and administratively related matters associated with the clients.

Finally, it should be noted that these suggested actions will not remedy the situation. Rather, they will merely mitigate a few of the unwarranted consequences that might be caused by the unabated rise in the mandated programs' caseload and the concurrent reduction in the payroll budget of this Department.

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